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Vol. 18. No. 12. pp. 485-530
Abstracts 2118-2324

December, 1948

# THE VETERINARY BULLETIN

1948

COMMONWEALTH MYCOLOGICAL INSTITUTE
24 JAN. 1949

COMMONWEALTH BUREAU OF ANIMAL HEALTH
WEYBRIDGE, SURREY
ENGLAND

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COMMONWEALTH BUREAU OF ANIMAL HEALTH

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# VETERINARY BULLETIN

Vol. 18.] December, 1948. [No. 12.

## DISEASES CAUSED BY BACTERIA AND FUNGI

RAMON, G., RICHOU, R., & HOLSTEIN, G. (1942.) L'application de l'anatoxine staphylococcique au traitement spécifique de diverses affections dues au staphylocoque chez les animaux domestiques. **[Treatment of staphylococcal infections in animals with anatoxin.]**—*Rev. Immunol.* **7.** 241–244. [Similar article appeared in **Bull. Acad. vet. Fr.* **15.** 55–59. Abst. in *Jber. Vet.-Med.* **71.** 121.] **2118**

The authors describe the use of staphylococcus anatoxin in the treatment of suppurative conditions in animals. Of 55 cases treated in horses, 44 recovered and six showed improvement. In cattle, 12 cases of staphylococcus mastitis were treated and ten animals recovered. The best results were obtained when the suppuration was due to a purely staphylococcus infection.—S. J. G.

PRIESTLEY, F. W., & ARTIOLI, D. (1945.) **Streptococcus mastitis in buffaloes.**—*Indian J. vet. Sci.* **15.** 255–261. **2119**

Examination of 3,322 milch buffaloes on five military farms in Lahore by van Rensburgh's technique (films of incubated milk) show 13·1 to 18·5% (mean 16%) incidence of infection with streptococci, nearly all presumably *Str. agalactiae.*

Other findings were as follows. Infected animals seem to excrete streptococci intermittently. Incidence increases with age. Animals are more susceptible in early lactation, as judged by incidence figures. There is some evidence that infected cows give less milk than healthy ones. A heat-killed polyvalent vaccine had no effect in prevention or cure. Some evidence was obtained from experiments of short duration that a strict control measure involving segregation of infected animals was a practical and economic proposition.

The authors stress the value of the simple v. Rensburgh technique [*V. B.* **14.** 1] for mass work in varying climatic conditions and when laboratory facilities are distant or meagre. [This is probably the first serious attempt to study mastitis in buffaloes.]—F. C. MINETT.

WAHBY, A. M., & HILMY, N. (1946.) **Prevalence of bovine mastitis in Egyptian dairy cattle.**—*J. comp. Path.* **56.** 246–253. **2120**

This survey is of especial interest as but few reports on mastitis appear to have been published from Egypt and the inclusion of the buffalo adds to this interest. The authors examined 500 milk samples from dairy cattle—450 from buffaloes and 50 from cows, all taken from dairy farms around Cairo. These were submitted to indirect and to direct tests, including the Hotis test. As the examinations could not be carried out at once the samples were stored in the ice chest for periods not exceeding 12 hours after collection. The indirect tests consisted of the pH reaction, the chloride determination and the leucocyte count test. The direct methods included bacteriological examination and the Hotis test. Clinical examination was unreliable as only 26·4% of affected cows were detected by this means.

Of the 500 lactating animals examined, 109 or 21·8% had pathogenic streptococci in their milk. The incidence of infection was virtually the same in the buffalo as in the cow. The indirect tests did not prove to be satisfactory, but the Hotis test was a valuable means of detecting mastitis, 92 out of 109 (84·4%) of positive cases being detected by this means. Cultivation of milk sediment was, however, less successful.

The authors conclude that for routine examination of individual milk samples for mastitis both tests should be employed. Results of the tests are summarized in two tables.—D. S. R.

KAWEH, M., & ENTESSAR, F. (1947.) Sur deux cas d'infection accidentelle de l'homme par une souche attenuée (vaccin) de *Bacillus anthracis.* **[Two cases of accidental infection of man by an attenuated strain (vaccine) of** *Bacillus anthracis.***]**—*Arch. Inst. d'Hessarek.* No. 5. pp. 73–77. **2121**

Two laboratory technicians were accidentally infected with an attenuated strain of *B. anthracis*,

the one by allowing his finger, on which he had a broken blister, to come in contact with the vaccine which he was measuring, the other by accidentally scratching his face while handling P.M. material from experimental laboratory animals.

In each case the disease was limited to a local area of inflammation with some oedema and recovery was complete in a fortnight. The authors suggest that persons working in conditions where there is opportunity to become infected with virulent strains should be vaccinated.

—A. M. LOOSMORE.

LARRALDE, R. W. (1946.) Importancia de la interinfección en las tuberculosis animales. **[Interinfection in animal tuberculosis.]**—*Rev. Med. vet. Parasit., Caracas.* **5.** 69–82. **2122**

A general article, discussing intertransmissibility of the bovine and avian types of tubercle bacillus between cattle and birds and man, dealing with methods of infection and also with P.P.D. tuberculin. No new material is described.

—I. W. JENNINGS.

DE BLIECK, L. (1941.) Aangifteplicht voor runderen, die lijden of verdacht zijn te lijden aan open tuberculose. **[The notification of suspected TB. in cattle.]**—*Tijdschr. Diergeneesk.* **68.** 919–922. **2123**

The author points out that although he agrees with most of the recommendations embodied in the 1940 report of the Dutch Veterinary Society [see *V. B.* **18.** 97] on the control of TB. in cattle, he cannot associate himself with the attitude adopted towards the compulsory notification of cases with open TB. He pleads for compulsory notification and maintains that no sound argument against it has been advanced. The administrative work entailed would be no more than that for the foot and mouth disease campaign. Compulsory notification would make owners obtain veterinary advice; at present open cases can be disposed of by sale and may within a short time pass through many herds disseminating infection.—P. L. LE R.

BRILLAS, J. S. (1944.) Sobre la epidemiologia de la tuberculosis. **[The epidemiology of TB.]** *Cienc. vet. (Rev.).* **5.** 118–126. **2124**

A review of the literature on the incidence of bovine TB. in man and an appeal for a campaign against the disease in Spain. It is estimated that there are 30,000 deaths in human beings from TB. annually in Spain but it is not known what percentage of these is due to bovine type infection.

—R. MACGREGOR.

TOJA, G. (1942.) Nota II. Rappresentazione grafica della sviluppo in peso dello cavia nell'infezione tubercolare sperimentale. **[II. Graphical representation of the change in weight of g. pigs infected experimentally with TB.]** —*G. Batt. Immun.* **29.** 153–185. [English, French and German summaries.] [For part I, see *V. B.* **18.** 242.] **2125**

The variations in weight of a group of g. pigs inoculated with the human type of *Mycobact. tuberculosis* are shown in tables and as graphs.

—I. W. JENNINGS.

REYNES, V., & DELBOVE, P. (1947.) Evolution de la tuberculose expérimentale chez les cobayes surinfectés par un virus typhoexanthématique. **[Experimental TB. in g. pigs infected with exanthematic typhus rickettsiae.]**—*C. R. Soc. Biol. Paris.* **141.** 211–212. **2126**

The authors inoculated g. pigs with human tubercle bacilli and superinfected the animals with the rickettsiae of either exanthematic typhus, murine typhus or tropical typhus about 2–5 weeks later and followed up the course of the tuberculous disease. No matter which rickettsia was used—the TB. took a slower course in the superinfected animals than in the controls infected with tubercle bacilli only.—E. KLIENEBERGER-NOBEL.

PHILP, R. C. T. (1946.) **The tuberculin test.**—*Tasm. J. Agric.* **17.** 257–261. **2127**

In response to a local criticism of tuberculin testing a description of the methods used and the arguments for testing are put forward. The importance of bovine tuberculosis in human beings is emphasized and attention drawn to the development of tuberculosis eradication in the United States of America.—D. C. BLOOD.

ARTHUR, G. H. (1948.) **Some observations on the blood leucocyte picture during the intradermal tuberculin test: II. The "skin-lesion" reactor.**—*Vet. J.* **104.** 38–41. [For part I, see *V. B.* **18.** 219.] **2128**

The author reports that the effect of the intradermal tuberculin test when used on cattle with so-called skin tuberculosis lesions is to cause the same changes in the blood picture (increase in total count of leucocytes, neutrophilia with shift to the left) as he recorded [see *V. B.* **18.** 219] when the test was carried out on cattle with true tuberculosis.—J. A. J. VENN.

ALESSANDRO, N. (1941.) Azione delle luci colorate sulla cutireazione tubercolinica. **[Action of monochromatic light on the cutituberculin reaction.]**—*G. Batt. Immun.* **27.** 561–564. [English, French and German summaries.] **2129**

In g. pigs infected by scarification in the dorsal region with human type tubercle bacilli and subjected to various kinds of monochromatic light, there was an inhibitory effect in the cutaneous tuberculin reaction in those animals receiving light having the longest wave length. This effect

decreased with decrease in wave length and with the shortest wave lengths of the visible spectrum there was no such effect. There may even have been a stimulating effect with the latter.—K. J. S.

WILSON, G. S. (1947.) **The value of B.C.G. vaccination in control of tuberculosis.**—*Brit. med. J.* November 29th. 855–859. **2130**

W. advocates a policy of *festina lente* in the introduction of BCG vaccination in Britain. He quotes experiments carried out in Europe and America and often cited as proof of the value of BCG vaccination. In each case attention is drawn to loopholes in the argument either because of lack of controls or possible faults in selection of the various groups.

The unavoidable difficulties associated with BCG vaccination on a large scale are listed and it is pointed out that although individually they are small, when taken collectively they present a serious problem.

A plan for a controlled experiment among nurses which would give results in 5–10 years is outlined —J. DEANS RANKIN.

WELLS, A. Q., & ROBB-SMITH, A. H. T. (1946.) **The murine type of tubercle bacillus (the vole acid-fast bacillus) with notes on the morphology of infection by the vole acid-fast bacillus.**—*Spec. Rep. Ser. med Res. Coun., Lond.* No. 259. pp. 48. London: His Majesty's Stationery Office. 2s. **2131**

W. describes the finding of the vole acid fast bacillus in various small mammals other than the wild vole. He refers to the distribution of the lesions and the duration of the disease, and discusses the possible routes of natural infection.

The characteristics of the organism are described in detail in sections dealing with its morphology, staining, culture, resistance, antigenic structure and ability to produce tuberculin. In the section on antigenic structure W. describes agglutination absorption tests with human, avian and bovine types of bacilli and with *Mycobact. phlei* and *Mycobact. smegma.* From the results of these tests he concludes that the vole bacillus is indistinguishable serologically from the human and bovine types of *Mycobact. tuberculosis.* The name "murine" is suggested as a possible type name.

In the section on pathogenicity the effect of the organism administered by various routes and over a wide range of dosage on a large number of small laboratory animals is described. The bacillus is not virulent in the fowl but was found to remain alive for 141 days in the unaltered spleen.

One calf was given a total of 90 mg. of culture orally. Marked sensitivity was developed to tuberculin after two months and it was highly sensitive for seven months. 10 mg. were then administered intravenously and systemic symptoms became apparent. The joints swelled, the limbs became oedematous and pus was present in the urine. The calf would not feed and was excessively thirsty. These symptoms remained for four days and then abated but the joints remained swollen. A month later the tuberculin reaction was again markedly positive. Three and a half months after the intravenous injection the calf was killed. It was in poor condition and there was some degree of erosion of the articular surfaces, but no sign of TB. Cultures were negative. Voles inoculated from the hepatic and bronchial lymph nodes developed TB.

Eighteen pages are devoted to immunization experiments largely in man and g. pigs and the experiment of Griffith and Dalling on calves [see *V. B.* **11.** 744] is summarized. It is pointed out that cattle are probably the best experimental animals to use in gauging the probable effect on human beings of immunizing agents against tuberculosis and that more work in this field would be of great help.

From the experiments on man it is concluded that the vole bacillus is "incapable of producing other than localized disease" and that the nature of the local reaction depends upon the depth of the injection in the skin. Subcutaneous injection frequently gives rise to a severe reaction in the form of a slow healing indolent ulcer. In all instances the local reaction following multiple puncture was mild.

In the second part of the booklet R-S. describes the lesions in the skin and subcutaneous tissue, the lymph nodes, and various organs of the vole following natural infection.

The corresponding lesions are described in the rabbit, g. pig and white mouse following artificial infection with the vole bacillus, and in the vole infected artificially with tubercle bacilli of human and bovine types.—J. D. RANKIN.

ANON. (1947.) **The vole bacillus.**—*Brit. med. J.* May 31st. 770–771. **2132**

For active immunization against tuberculosis a vaccine consisting of vole bacilli has now to be considered. Wells, the discoverer of the vole bacillus, in a recently published monograph on the subject [see preceding abstract] gives an account of all the research so far done on this subject. The vole bacillus, though distinct morphologically and culturally from other types of tubercle bacilli is serologically indistinguishable from the human and bovine types and if subcutaneously injected into g. pigs or calves it produces a high degree of resistance to subsequent inoculation with virulent bacilli. For the first

time also human beings have been inoculated with vole bacilli and the outcome of these experiments shows that immunization with these organisms may prove to be a valuable method in the fight against TB.—E. KLIENEBERGER-NOBEL.

RIORDAN, J. T. (1944.) **Specific metabolic products of the tubercle bacillus. An unsuccessful search for them in the urine of tuberculous patients.**—*Amer. Rev. Tuberc.* **50.** 534–542. [Spanish summary.] **2133**

Tubercle polysaccharide, phosphatide and protein were not detected in the concentrated urine of human pulmonary TB. patients nor rhesus monkeys infected with TB. Tests for all three chemical fractions were made by precipitin reactions with immune serum, and polysaccharide and protein were also tested for by the collodion particle agglutination test with immune serum. Skin tests on monkeys with the protein fraction of urine obtained by precipitation with ammonium sulphate, also gave negative results. It would thus appear that if such substances are liberated from TB. lesions *in vivo*, they are destroyed by the body before being excreted in the urine.—R. MARSHALL.

BRIGGS, G. O. A., & JENNISON, M. H. (1947.) **Detection of *Mycobacterium tuberculosis* by means of fluorescence microscopy.**—*Tubercle, Lond.* **28.** 189–192. [Authors' summary copied *verbatim.*] **2134**

An investigation has been carried out on a total of 500 sputum specimens. One smear was prepared from each specimen, and stained and examined by both the fluorescence and a modified Ziehl-Neelsen technique. The modified Ziehl-Neelsen technique yielded 1·4 per cent. more positives for an expenditure of less time than that required by the fluorescence technique.

On examining each of 500 smears the modified Ziehl-Neelsen technique averaged six seconds less time per smear, or an overall saving of 50 minutes. Cultures were made of all doubtful positives, and in the case of the modified Ziehl-Neelsen technique more than double the number of such positive results were confirmed by culture than were those by the fluorescence microscopic technique.

*CONRADI, H. (1941.) Ueber die Brauchbarkeit des neuesten Nährbodens nach Hohn (Substrat 4) für die Tuberkelbakterienzüchtung in der Veterinärmedizin. **[The usefulness of Hohn's substrate 4 for the culture of the tubercle bacillus.]**—*Inaug. Diss., Leipzig.* [Abst. from abst. in *Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* August 20th. 286. (1943).] **2135**

Hohn's medium was successfully used for the culture differentiation of tubercle bacilli from animal organs. The substrate 4 was more convenient to prepare than was Petragnani's medium. In some of the culture tubes the medium, originally green, became yellow because of a change of pH during bacterial growth.—E. KODICEK.

WEITZ, B. (1947.) **The bacterial flora found in the vagina of dairy cows with special reference to corynebacteria.**—*J. comp. Path.* **57.** 191–195. **2136**

W. made firstly a survey of three normal herds consisting altogether of 100 cows. Secondly, he examined infertile animals with and without abnormal discharge. In the cows without discharge the bacterial flora was similar to that of normal animals. It was found that *Corynebact. renale* is a frequent and possibly normal inhabitant of the posterior urinary tract of dairy cows, while *Corynebact. pyogenes* is associated with endometritis and occurs in cows with a purulent discharge.—E. KLIENEBERGER-NOBEL.

—. (1946.) Il mal rossino secondo le recenti vedute. **[Recent findings concerning swine erysipelas.]**—*Clin. vet., Milano.* **69.** 93–96. **2137**

This is a short discussion on *Erysipelothrix rhusiopathiae* infection in man and animals. No new material is described. [The author does not mention recent work on penicillin therapy.]

—I. W. JENNINGS.

SPARAPANI, G. C. (1946.) La listerellosi dei polli. **[Listeriasis [*Erysipelothrix monocytogenes*] in fowls.]**—*Clin. vet., Milano.* **69.** 54–59. **2138**

A general description of the symptoms, lesions and diagnosis of listeriasis in fowls, together with suggestions for keeping an outbreak in check by hygienic measures.—I. W. JENNINGS.

PEPERKAMP, C. W. A. N., & JANSEN, J. (1947.) Listerellosis bij de kip. **[*Erysipelothrix monocytogenes* infection in fowls.]**—*Tijdschr. Diergeneesk.* **72.** 389–390. [English summary.] **2139**

This is a report of what is believed to be the first case of *E. monocytogenes* infection in a fowl in Holland. On P.M. examination enteritis was present. *E. monocytogenes* was cultivated from the liver. A canary died in three days after intramuscular injection. Cultures from the organs of the canary injected into a fowl caused death in two days.—E. V. L.

MORCOS, Z., ZAKI, O. A., & ZAKI, R. (1947.) **Bacteriological study of swine pneumonia in Egypt.**—*Vet. Med.* **42.** 255–258. **2140**

Bacteriological examination of a series of pneumonic lungs from pigs indicated that the commonest organisms present were *Pasteurella suiseptica* 55%, and *Corynebacterium pyogenes* 35%. *Salmonella cholerae-suis* was present in only 5% of cases.

Some details are given of the use in g. pigs

of a vaccine prepared with *Past. suiseptica.* It is stated that useful results were obtained.—D. LUKE.

CAMPBELL, J. J. R., & REED, G. B. (1947.) **Characteristics of some psychrophylic bacteria.** —*Canad. J. Res.* Sect. F. **25.** 280–283. **2141**

Some ten cultures of four different bacterial species were isolated from a few lots of tryptic digest of casein, adjusted to pH 5·0, which, unlike the majority of batches, became cloudy on storage at 4°C. Six of the ten cultures were *Proteus ichthyosmius*, two *Pseudomonas schuylkilliensis*, one, *P. fluorescens* and one, *Lactobacillus leichmannii.* The *Proteus* and *Pseudomonas* strains grew at 0°C. and the *Lactobacillus* at 0°–5°C. This observation appeared of interest to the authors because, apart from *Pseudomonas*, they could find no previous record of the growth of these bacterial species at such low temperatures.—C. E. RICE.

LERENA, E. A. (1946.) Apuntes estadisticos sobre neumoenteritis de los terneros. [**Pneumoenteritis of calves.**]—*Rev. zootéc.* **33.** 13–24. **2142**

Reviewing 95 outbreaks of pneumoenteritis in Argentina from 1942–45, L. found that *Salmonella enteritidis*, *Bact. coli* and *Str. pyogenes* were the organisms most commonly involved, but he admits the possibility of a virus being concerned in the aetiology. While considering the distribution of the outbreaks in the various provinces, he noted that low incidence corresponded with a dry season. Animals up to three months of age were the most susceptible, infection after that time being exceptional. Maximum incidence was during the hot months, November-February, but this of course was connected with the breeding season. Clinical manifestations were mainly respiratory (60%) and enteric (29%) while pneumoenteric, arthritic and other syndromes were seldom seen. The usual course of the disease was subacute (3–10 days) with a tendency to chronicity, particularly in younger animals with arthritis. Acute fatal cases constituted 12% of the total.—I. W. J.

DONEDDU, C. (1940.) Studio sui rapporti reciproci tra vitamina C ed i germi del gruppo tifo-coli e del gruppo brucella. [**The behaviour towards vitamin C of bacteria of the typhoid, *coli* and *Brucella* groups.**]—*G. Batt. Immun.* **24.** 17–34. [English, French & German summaries.] **2143**

*Salmonella typhi*, *S. paratyphi A.*, *Bact. coli*, and *Br. melitensis* behaved similarly in causing a progressive decline of the ascorbic acid without completely exhausting the supply. *S. paratyphi* B and to a lesser degree *Br. abortus* quickly reduced the vitamin C content and the former organism exhausted it entirely. Consumption of vitamin C decreased with increasing age of colonies and had no relation to life or death of the bacteria, indicating that bacterial substances, probably endo- or exotoxins, were responsible for the reaction. Power to utilize vitamin C increased with passages of the bacteria, particularly in the case of *S. paratyphi* B, through media enriched with the vitamin. Accordingly vitamin C has no bactericidal action on the species studied.—K. J. SINCLAIR.

CARPENTER, J. A., BURTON, W. H., & GARRARD, E. H. (1947.) **Non-pullorum agglutination reactions. III. Reactions with pullorum antigen from fowl inoculated with an enterococcus.**—*Canad. J. comp. Med.* **11.** 163–168. [For previous parts, see *V. B.* **18.** 295.] **2144**

Twenty hens were inoculated intravenously with an enterococcus isolated from the liver of a hen whose serum had given reactions with pullorum antigens. The infected birds developed agglutinins against both types of pullorum antigen, the majority occurring with the variant form. Titres as high as 1 : 640 and 1 : 1,280 were recorded. P.M. examination showed "ulcerative" necrosis of liver and spleen and degeneration of the organs. The organism was recovered from eight hens. Absorption of the $XII_2$ factor from enterococcus serum removed agglutinins for *Proteus*, both forms of *S. pullorum* and *S. reading* antigens.—R. GWATKIN.

TSION, R. A., & OVCHINNIKOV, S. M. (1943.) Problema vyzdorovleniya pri brutsellëze sel'skokhozyaĭstvennykh zhivotnykh. [**Recovery of farm animals from brucella infection.**]—*Veterinariya, Moscow.* No. 12. pp. 17–23. **2145**

A general article mostly on conventional lines. Immunity to brucellosis is stated to be independent of retention of infection and active immunization is advocated. The use of segregation for the elimination of infection is discussed.—K. A. A.

VYSHELESSKIĬ, S. N. (1944.) O samovyzdorovlenii sel'skokhozyaistvennykh zhivotnykh ot brutsellëza. [**Spontaneous recovery of farm animals from brucellosis.**]—*Veterinariya, Moscow.* No. 11–12. pp. 22–28. **2146**

The author reviews the literature on recovery of infected animals. His own experience indicates that 50–60% of all infected cattle if isolated will recover completely after three years, younger cows more frequently and in a shorter period. If serologically negative such recovered individuals can be regarded as immune.

Calves 4–8 months old can be kept with infected herds because of their immunity, which some consider is even increased thereby, but as 8–10 months old cattle are extremely susceptible they should be vaccinated (strain 19) when 4–8 months old.

There is some evidence that other species of

domestic animals undergo spontaneous recovery, but little precise knowledge is available.—K. A. A.

ANON. (1947.) Gleichzeitige Schutzimpfung gegen Gasoedem-Erkrankungen des Rindes und gegen Abortus Bang mittels Vakzine Buck 19. **[Simultaneous inoculation against gas oedema and brucellosis in cattle.]**—*Schweiz. Arch. Tierheilk.* **89.** 143–149. **2147**

Combined inoculation of g. pigs against blackleg, malignant oedema and brucella (strain 19) caused no disturbance in the general condition of the animals and did not affect the efficiency of either vaccine.

A single injection of 10 ml. strain 19 vaccine, followed 2–3 weeks later by the same dose in conjunction with vaccination against blackleg and malignant oedema is therefore recommended for cattle.—P. SASSE.

MASSIDDA, A. (1941.) Sulla specificità delle reazioni agglutinanti e precipitanti nelle infezioni da brucella paramelitense. **[The specificity of the agglutination and precipitation tests in *Brucella paramelitensis* infections.]**—*G. Batt. Immun.* **27.** 257–280. [English, French & German summaries.] **2148**

Agglutination tests with four strains of *Brucella melitensis* were carried out on active and inactivated sera from healthy subjects and from brucellosis patients, also from inoculated patients and animals. Inactivation of the sera caused an appreciable diminution of the agglutinating power of the strains. Precipitation tests using the polysaccharide from the same strains as antigen also failed as diagnostic aids since they were too highly non-specific to the active sera and were frequently negative with inactivated sera, even with that from subjects inoculated with the same *Brucella* species —K. J. SINCLAIR.

SAVEL'EV, G. S. (1943.) Ochistka khozyaĭstv ot brutsellëza putëm udaleniya bol'nykh zhivotnykh iz stada. **[Eradication of brucellosis by disposal of infected animals].**—*Veterinariya, Moscow.* No. 12. pp. 24–28. **2149**

A conventional article dealing with segregation based on the results of the agglutination test. Reactors that cease to react are returned to the herd.—K. A. ALLEN.

VERGE, J. (1946.) Recherches sur les brucelloses canines. **[Incidence of canine brucellosis in Paris.]**—*C. R. Soc. Biol. Paris.* **140.** 239–241. **2150**

The work done has been described elsewhere [see *V. B.* **18.** 108].

CORDIER, G., & BRUMPT, C. (1943.) Hémo- et lacto-agglutinations rapides appliqueés au diagnostic et à la prophylaxie des brucelloses. **[Brucella rapid plate agglutination tests in cattle using whole blood serum and milk.]**—*Bull. Acad. Méd., Paris.* **127.** 10–12. **2151**

A general discussion on the merits of different methods of making agglutination tests by the rapid plate technique, with some comparison with the slow tube method. The relative values of whole blood, of serum and of milk as the test material are compared. The authors consider that the use of milk is more reliable and more convenient and that the antigen should consist of a mixture of strains.—J. ZWEIG.

VOLK, W. (1943.) Zur Frage der Beweglichkeit des Bacterium tularense. **[The motility of *Brucella tularensis*.]**—*Wien. tierärztl. Mschr.* **34.** 45–46. (1947.) **2152**

The author examined 20 strains of *Brucella tularensis* of Central European origin. He could not detect flagella or prove motility in a single case, although he tried different media and temperatures. Thus the author was not able to confirm Ohara's findings with Japanese *Br. tularensis* strains.—E. KLIENEBERGER-NOBEL.

HANKE, M. E., & BAILEY, J. H. (1945.) **Oxidation-reduction potential requirements of *Cl. welchii* and other clostridia.**—*Proc. Soc. exp. Biol., N.Y.* **59.** 163–166. **2153**

The oxidation-reduction potentials of *Clostridium welchii*, *Cl. sporogenes* and *Cl. histolyticum* were determined at various pH values. From the data obtained the conclusions were that (1) there was a marked difference between the oxidation-reduction requirements of the three organisms; at pH 6·4 *Cl. welchii* grew at a more positive Eh value (+160 mv) than *Cl. sporogenes* (145–150 mv.) while *Cl. histolyticum* grew at Eh (85–90 mv.). (2) The pH value had a marked effect on the limiting Eh value for growth, *e.g.*, at pH 7·0, *Cl. sporogenes* grew at a more positive Eh (114 mv.) than *Cl. welchii* (90 mv.) or *Cl. histolyticum* (60–76 mv.). *Cl. histolyticum* required much stronger reducing conditions than the other two clostridia. —E. KLIENEBERGER-NOBEL.

ZAMECNIK, P. C., & LIPMANN, F. (1947.) **A study of the competition of lecithin and antitoxin for *Cl. welchii* lecithinase.**—*J. exp. Med.* **85.** 395–403. [Authors' summary copied *verbatim*.] **2154**

Lecithin has been found to interfere with the combining reaction of *Cl. welchii* alpha toxin (lecithinase) and its antitoxin [see *V. B.* **12.** 335]. If the lecithinase is first brought into contact with lecithin, and the antitoxin is then added, the antitoxin fails to stop the enzymatic reaction, but gradually decelerates it. If the lecithinase is brought into contact with both lecithin and antitoxin at the same instant, it appears to combine

in part with each, and the enzymatic process takes place at a reduced rate, which gradually declines further. If the lecithinase is first brought into contact with antitoxin, before the lecithin is added, the enzymatic reaction is completely inhibited.

This ability of lecithin to inhibit the antitoxin-toxin combination cannot be explained adequately as a non-specific coating of the toxin-enzyme by the lecithin. It is rather suggested that lecithin and antitoxin compete specifically for combination with the same regions on the enzyme molecule.

Lecithin has similarly been found to interfere with the combination of *Crotalus terrificus* venom and its antiserum.

The above findings provide a partial explanation for the lack of effectiveness of antitoxin when given late in the course of *Cl. welchii* infection.

RHOADES, H. E., & HARDENBROOK, H., Jr. (1947.) **The occurrence of vibrionic abortion in an Illinois dairy herd.**—*Cornell Vet.* **37.** 8–13. [Authors' summary copied *verbatim.*] **2155**

*Vibrio fetus* was isolated from the stomach contents of three fetuses aborted in November and December, 1945, and March, 1946, respectively, in the Holstein unit of a large Illinois dairy herd. So far as the authors can determine, this is apparently the first report of the occurrence of vibrionic abortion in cattle in Illinois. The vibrio isolated from aborted fetuses did not produce abortions when administered intravenously, orally, or by intra-uterine inoculation to three pregnant cows. It is possible that attenuation of the organism when grown on laboratory media may explain its failure to cause abortion in these cows. Electron photomicrographs of the organism are presented.

VERGE, J. (1947.) "Vibrio foetus", agent d'un avortement infectieux des ruminants, est-il pathogène pour l'homme? **[Is *Vibrio foetus* pathogenic for man?]**—*Rev. Path. comp.* **47.** 309–312. **2156**

After a brief survey of the literature the author describes a case of a woman in France who aborted at the sixth month of pregnancy after an acute illness. During the course of her illness a mixed infection with a staphylococcus and a vibrio was revealed on culture of the peripheral blood.

The vibrio which was isolated was identified as *V. foetus* and the author claims that this is the first time it has been isolated in France from either animals or man. Infection is believed to have been by means of milk from a cow which had recently aborted. Unfortunately the cause of abortion in this cow was not determined.—M. C.

CURASSON, G., & MORNET, P. (1941.) Une maladie grave et commune en Afrique occidentale et cependant peu connue: La streptothricose cutanée du boeuf. **[Cutaneous streptothricosis of cattle.]**—*Bull. Serv. zootech. Epiz. A.O.F.* **4.** 181–184. **2157**

Attention is drawn to the wide distribution of bovine streptothricosis in Africa, and to the heavy losses it may cause. The disease is seasonal being prevalent in the winter and rainy seasons. It also affects goats and sheep, and one case was reported in a horse. Dipping in arsenicals is curative, but can only be used in settled areas. In the Niger a routine dressing of picric acid 3 g., copper sulphate 3 g., water 1,000 g. is used, but it has not given satisfactory results elsewhere. For the primary lesions vaseline ointments containing cresol, copper sulphate, picric acid, coal tar, etc., can be recommended, but when warty thickening develops, though cauterization sometimes effects a cure, slaughter is advisable to remove the source of contagion, as in the majority of cases relapses occur with progressive loss of condition. Nothing is said about the names of causal organisms.—U. F. RICHARDSON.

LACROIX, L. J., RISER, W. H., & KARLSON, A. G. (1947.) **Blastomycosis in the dog. A case report.**—*N. Amer. Vet.* **28.** 603–604 & 606. **2158**

The subject, a crossbred collie, had difficulty in swallowing and rabies was suspected at first. There was purulent discharge from the eyes. Treatment with sulphamerazine was given but the dog died. On P.M. examination the lungs had miliary nodules throughout and the mediastinal lymph nodes were enlarged. All other organs were normal. The histopathology of the lung lesions is described and illustrated. Budding organisms which were identified as *Blastomyces* were seen, some of these were contained within giant cells. No cultural examination was made. —M. C.

MULHEARN, C. R. (1946.) **Contagious bovine pleuro-pneumonia.**—*Qd agric. J.* **63.** 162–166. **2159**

This is a general article on the disease as it occurs in the northern parts of Australia. Symptoms and autopsy findings are described and the importance of "carrier" animals is stressed. The prevention and control of the disease including vaccination and its untoward sequelae are also discussed.—D. C. BLOOD.

CHENG, S. C., & HO, C. L. (1943) **[The study on the infectivity of bovine contagious pleuro-pneumonia.]**—*Chin. J. Anim. Indust.* **1.** 260–265. **2160**

The authors failed to produce typical bovine contagious pleuro-pneumonia by injecting either pure culture subcutaneously, intradermally or

intravenously, or lymph fluid from infected animals intravenously. They supported the general belief that the normal route of infection is *via* the respiratory tract and succeeded in producing the disease with typical symptoms and lesions by inhalation.—S. J. Chu.

Ho, C. L. (1944.) **[Studies on bovine contagious pleuro-pneumonia vaccine.]**—*Chin. J. Anim. Indust.* **2.** 350–363. **2161**

Attenuated culture of bovine contagious pleuro-pneumonia organism was used for immunization. Attenuation was effected by subculturing the organism in nutrient broth containing 10% bovine serum. 100% efficiency was obtained when the 49th subculture was used subcutaneously, but the reaction was very vigorous. An efficiency of only 80·7% was achieved when the 60th subculture was injected subcutaneously. Efficiency rose to 100% with only mild local reaction, when the 49th subculture was used intradermally.

—S. J. Chu.

Larrat, R., & Faudhet-Sangaret. (1942.) Emploi du virus-vaccin antiperipneumonique. Réaction vaccinale et affections intercurrentes (Pasteurellose et coccidiose). **[Immunization against bovine contagious pleuropneumonia.]** —*Bull. Serv. zootech. Epiz. A.O.F.* **5.** 185–205. **2162**

The authors report on the vaccination against bovine contagious pleuro-pneumonia of two batches of cattle in Senegal.

Of the first batch of 155 cows and 200 calves, which received 1 ml. doses of 18th generation culture, 14 cows and four calves reacted severely. There were six deaths amongst the cows and seven unexamined deaths in the calves. In two cows examined P.M. lesions of pasteurellosis were revealed and Gram negative cocco-bacilli were isolated in pure culture from the lesions.

In the second series 106 adults and 57 calves received 22nd generation culture. Forty-four of these reacted severely and 20, 12 cows and eight calves, died. Conditions on this occasion were very unfavourable. The authors attribute the 20 deaths and four of the severe reactions in animals that eventually recovered, to intercurrent pasteurellosis, complicated in two cases by coccidiosis. Clinically the pasteurellosis ran a sub-acute course (18–32 days) and was of the respiratory or respiratory-intestinal type.

[No investigation of the pathogenicity of the cocco-bacilli is reported.]—J. Richard Hudson.

Bonezzi, G., & Cavalli, L., & Magni, G. (1942.) Osservazioni sulla genetica dei batteri. **[Observations on genetics of bacteria.]**—*G. Batt. Immun.* **29.** 389–404. [English, French & German summaries.] **2163**

A general discussion with no new material.

—K. J. Sinclair.

Conn, H. J., & Elrod, R. P. (1947.) **Concerning flagellation and motility.**—*J. Bact.* **54.** 681–687. **2164**

Pijper [see *V. B.* **17.** 592] studied flagellated organisms by a special dark ground method and proposed the thesis that bacterial flagella are only artefacts produced on the drying of a carbohydrate envelope surrounding the cell. In contrast to this the authors' electron microscope studies have brought forward evidence in favour of the view that flagella are definite entities fixed to the very body of the cell and therefore still have the significance which was attached to them in the past.—E. Klieneberger-Nobel.

*See also absts.* **2241** (anthrax, pasteurellosis, brucellosis); **2258** (pyrogenic bacteria); **2261** (antibiotics); **2275** (bacteria in milk), **2297-2298** (technique); **2305** (staining of bacteria); **2316** and **2317** (various in Australia); **2318** (pleuropneumonia, bovine contagious in Tanganyika); **2324** (course of veterinary microbiology—textbook).

## DISEASES CAUSED BY PROTOZOAN PARASITES

Basu, B. C. (1945.) **Distribution and seasonal incidence of surra in India.**—*Indian J. vet. Sci.* **15.** 277–280. **2165**

Figures covering 1940–42 and relating to some 12,000 cases, of which 1,000 were in bovines, 6,000 in equines and the rest in camels, etc., show that surra is prevalent more or less throughout India. Few cases appear from January to June. Peaks are in August with cattle, in October with equines and in September with camels. The peak for all cases is in September. Punjab is the worst affected area, and there the seasonal curves for surra coincide with those for human malaria.

—F. C. Minett.

Chládecký, F. (1947.) Príspevok k dôkazu kmena trypanosoma equiperdum u nakazených koní. **[A contribution to the detection of the strain of *Trypanosoma equiperdum* in infected horses.]**—*Čas. československ. Vet.* **2.** 137–144. **2166**

The author reports positive results with three clinically affected stallions, with one without clinical symptoms, and also with four clinically affected mares.

The diagnosis of dourine by the demonstration of the trypanosome by microscopic examination or by subcutaneous or intraperitoneal inoculation of laboratory animals is often unreliable especially in advanced stages of the disease.

C. supports previous authors who found intratesticular inoculation in the rabbit a good method for this purpose. When infection results an orchitis develops and the trypanosomes are present in the affected tissue. Mice and rats can

be infected by intraperitoneal inoculation of material from such a lesion.—E. PŘIBYL.

SCHUELER, F. W. (1947.) **The mechanism of drug resistance in trypanosomes. II. A method for the differential staining of normal and drug resistant trypanosomes and its possible relation to the mechanics of drug resistance.**—*J. infect. Dis.* **81.** 139–146. [For part I, see *V. B.* **18.** 312.] **2167**

It has been suggested that the mechanism by which trypanosomes acquire resistance to arsenical drugs may involve the development of resistance to the substituent basic or acidic groups on the phenylarsenoxide molecule. Hence the resistance acquiring process may involve a shift in the isoelectric points of some of the constituent proteins of the trypanosomes. It was found possible to show differences in staining reaction to basic and acidic dyes in certain strains of normal and drug resistant trypanosomes.

The four strains of trypanosomes used included normal and mapharsen (an arsenoxide) resistant *T. equiperdum*, and normal and (pentavalent) arsenic resistant *T. hippicum*.—S. B. K.

BARTLETT, D. E. (1947.) *Trichomonas foetus* **infection and bovine reproduction.**—*Amer. J. vet. Res.* **8.** 343–352. **2168**

In this contribution B. describes the work of the Zoological Division of the U.S. Bureau of Animal Industry in connection with trichomoniasis covering the period from 1936 to 1947. The animals under observation were 29 heifers and cows. All of the 29 females proved susceptible to infection with *T. foetus*. These females were subsequently re-exposed and only 21 infections resulted from 114 exposures, this result being, in B.'s view, an indication of specific immunity. The appearance of trichomonads took place between 8 and 30 days after infection and the duration of infection was from 6 to 100 days. B. also observed that after oestrus there is a tendency to self cure. None of the females completed a normal pregnancy following infection with *T. foetus* [in our experience it is quite common for normal pregnancy to occur following a definite infection].

B. was unable to show trichomonads *post partum* in any of his experiments.

In his review of the literature on this subject B. erroneously states that Kerr and Robertson had presented circumstantial evidence of *post partum* existence of the trichomonads.

There has been a tendency to look upon trichomoniasis by and large, chiefly as a disease causing abortion and pyometra; this paper should assist considerably in rectifying these misconceptions.—W. R. KERR.

FLORENT, A., & WILLEMS, R. (1947.) Pouvoir agglutinant du mucus vaginal vis-à-vis de *Trichomonas foetus* dans la trichomonose du bétail. [**Agglutination of** *Trichomonas foetus* **by vaginal mucus.**]—*C.R. Soc. Biol. Paris.* **141.** 957–958. **2169**

F. describes a phenomenon observed in the course of his work on bovine trichomoniasis. When the vaginal mucus of an animal known to be infected is obtained by curette from around the os uteri, placed on a plate or slide and a drop of emulsion of active trichomonads in physiological saline placed close to it and allowed to mix with the mucus, an agglutination takes place in approximately ten minutes. He states this is specific because when the mucus of 50 known non-infected cows was tested no agglutination resulted, whereas tests of the mucus from 50 cows of known trichomonad history gave 36 positive results.

—W. R. KERR.

MANDOUL, R., & DARGELOS, R. (1945.) Une amélioration à la technique de culture du *Trichomonas* de la bouche. [**Improvement in culture method for oral trichomonads.**]—*C.R. Soc. Biol. Paris.* **139.** 847–848. **2170**

The authors have shown (1944) that the addition of sulphonamide to Deschien's modification of Dobell's medium is of great advantage in the cultivation of oral trichomonads. They now show that in using the Dobell-Deschien's medium with the addition of a mixture of *p*-aminobenzene - sulphonyl - guanidine and *p* - aminophenyl-sulphonamide cultures of oral trichomonads may be maintained in the laboratory without difficulty at 37°C.—C. HORTON SMITH.

CURASSON, M. G. (1940.) "Trichomonas" dans le sang d'un cobaye infecté par "Trypanosoma congolense." [**Trichomonas in the blood of a g. pig.**]—*Bull. Serv. zootech. Epiz. A.O.F.* **3.** 236–237. **2171**

In the preamble C. mentions several authors principally Wagner and Hess (1937) as having stated that they found trichomonads in the blood of various animals including man. C. states that in the course of his work on trypanosomes he found prior to death trichomonad-like parasites in the blood of a g. pig infected with *Trypanosoma congolense*. [It is a pity that cultures were not made from such recorded cases so that means other than visual could have been used to identify and type the suspected organisms.]—W. R. KERR.

I. SWALES, W. E., & BENHAM, G. H. (1947.) **On the chemotherapy of caecal coccidiosis (*Eimeria tenella*) of chickens. III. Observations on sulphonamides in the intestinal tract and blood.**—*Canad. J. Res.* Sect. D. **25.** 122–129. [For previous parts, see *V. B.* **15.** 310, and **16.** 373.] **2172**

II. SWALES, W. E. (1946.) **The chemotherapy of cecal coccidiosis (*Eimeria tenella*) of chickens. IV. Experiments on the use of chemotherapy during the immunizing exposure of chicks.**—*J. Amer. vet. med. Ass.* **108.** 393–400. **2173**

III. SWALES, W. E. (1947.) **On the chemotherapy of caecal coccidiosis (*Eimeria tenella*) of chickens. V. Some further tests of drugs for a coccidiostatic effect.**—*Canad. J. comp. Med.* **11.** 123–124. **2174**

I. Chickens dosed with sulphonamides were killed four hours later and the contents of the caeca and small intestines were analysed. Sulphamerazine was constantly found in the caeca in small amounts, even when the caeca had been surgically detached from the rest of the intestine prior to dosing and also following intravenous administration. These facts indicate that the drug is excreted *via* the caeca. Sulphathiazole, sulphapyridine, and sulphanilamide were also excreted *via* the caeca. As caecal coccidiosis of chicks is inhibited by sulphamerazine and not by the other three sulphonamides used in these tests, it is concluded that the inhibitory effect is related to drug structure rather than to the concentration of the drug at the point of infection.—J. FRANK.

II. 1·0 g. sulphamerazine per lb. of dry mash prevents mortality in chicks exposed to infection with *Eimeria tenella* but does not hinder development of immunity. S. suggests that infected chicks be treated at the onset of symptoms and that all chicks subsequently put on to infected pasture be treated for the first six days following exposure to infection, thus preventing the onset of clinical disease while the chick acquires immunity from exposure to the contaminated pens.

—G. B. S. HEATH.

III. The chickens used were of various breeds aged from 4–6 weeks. Natural infection by exposure in infected pens, and artificial infection by administration of oocysts, were used in different experiments. Paludrine hydrochloride, azosulphamide (Neoprontosil) $N_1$-thenoylsulphanilamide and $N_1$-benzoylsulphanilamide all failed to show a coccidiostatic effect when tested against caecal coccidiosis (*Eimeria tenella* infection) of chicks.—R. GWATKIN.

PONS, R. (1944.) Un fait concernant la prémunition antipalustre. **[Premunition against malaria.]**—*Bull. Soc. Path. exot.* **37.** 218–221. **2175**

The notion of premunition is based on the fact that individuals after long and continuous sojourns in regions where malaria is highly endemic develop a resistance as interpreted by absence of symptoms. The fundamental difference between premunition and true immunity lies in the fact that the latter persists for long years after recovery and in the absence of infection, whereas in premunition the survival of the infective agent in the infected organism is believed to be necessary to its maintenance. It seems that successive reinoculations, both massive and frequent, are essential for the establishment and persistence of premunition. The true nature of premunition has still to be investigated and precise definition of the term devised.—C. H. S.

*See also abst.* **2241** (piroplasmosis and trypanosomiasis).

LOTZE, J. C. (1947.) **Blood transfusions in bovine anaplasmosis.**—*Amer. J. vet. Res.* **8.** 284–288. **2176**

Observations are recorded on five cases of experimentally produced bovine anaplasmosis in which blood transfusions were administered in order to study the host-parasite relationship in the disease, and the practicability of treatment by transfusion. Only one of the five animals failed to improve noticeably following blood transfusion with 1·75 l.; and in this case death occurred before the parasite population began to decrease, and whilst the presence of immature red cells in the blood was suggestive of the peak of infection. In one case the prognosis was never grave. One of the remaining three animals was slaughtered, but it is suggested it might have recovered had more than the six litres of blood been transfused. The immediate noticeable effect of transfusion was an improvement in appetite.

It is concluded that, at least in certain cases, blood transfusion is indicated because of the inability of the host to regenerate red blood cells to overcome the severe anaemia which follows the peak of infection, and the evidence indicates that to be effective, blood must be transfused in large quantities.

The information as to the amount of whole blood which can be safely administered at one time is discussed, in these experiments it being deemed advisable to allow the recipient to rest 15–30 minutes after each two litres of blood. The question of blood groups in cattle is also discussed, and it is suggested that adverse conditions may arise from failure to determine the compatibility of the blood of donors and recipients.

—U. F. RICHARDSON.

## DISEASES CAUSED BY VIRUSES AND RICKETTSIA

HOLZ, K. (1943.) Über Myokardschäden bei der Maul- und Klauenseuche des Rindes. **[Injury of the myocardium in foot and mouth disease.]**—*Virchows Arch.* **310.** 257–290. **2177**

An illustrated account is given of the macroscopic and microscope appearances of myocardial damage, at different known intervals after artificial infection with F. & M. disease, in a series of cases (134 cattle and six swine). In cattle, the main lesions were parenchymatous degeneration, followed by exudative and proliferative changes, and a focal non-purulent interstitial myocarditis, unrelated to the parenchymatous lesions as regards position.

As early as 24 hours after infection, focal fatty degeneration of muscle fibres was seen, and at this stage there were also present an increase of pericardial fluid and cell infiltrations of the adventitia of blood vessels. Necrotic foci were present at the 5th–7th day, at which time illness and mortality from "tiger heart" were at a maximum. The lesions occurred particularly near the left auriculo-ventricular fibrous ring, in the papillary muscles, and at the apex of the heart. Early organization was seen from the 12th–20th day, fibrosis and scarring following.

The article is of interest as providing indications by which the probable age and significance of suspicious myocardial lesions may be estimated.

—E. COTCHIN.

REMLINGER, P., & BAILLY, J. (1946.) La rachicentèse occipitale procédé expéditif d'inoculation sous-dure-mérienne du chien. **[Technique of subdural inoculation in the dog for the preparation of rabies vaccine.]**—*Arch. Inst. Pasteur Algér.* **24.** 104–109. **2178**

By subdural inoculation in the dog four times the dose of rabies-infected nervous tissue can be injected as compared with the intracranial route; there is less danger from trauma, it is much quicker, and fewer instruments and trained personnel are required.

In Tangier this procedure was adopted at first owing to the shortage of trephines. 133 dogs were thus inoculated with rabies virus at the rate of six in 45 minutes, as against two and a half hours required for cranial trephining. Only one dog developed paralysis from trauma and it recovered completely in 24 hours. A dog that had proved resistant to two doses of 0·5 ml. virulent infected material by the intracerebral route became infected after 2 ml. was inoculated by the occipito-atlantal route. The authors operate without an anaesthetic. They give details of the technique of making the injection. [See BROOK, G. B. *V.B.* **7.** 99, for an account of how to make a subdural injection.]—R. MACGREGOR.

HENLE, W., & HENLE, G. (1947.) **The effect of ultraviolet irradiation on various properties of influenza viruses.**—*J. exp. Med.* **85.** 347–364. [Authors' summary copied *verbatim.*] **2179**

The effect of ultraviolet irradiation on various properties of the influenza viruses Types A and B has been analysed. The studies involved propagation and interference in the allantoic sac of the chick embryo, inhibition of embryonic development, toxicity for white mice, hemagglutination including the adsorption-elution mechanism, immunizing capacity for mice and, finally, complement fixation activities in the presence of antibodies to the 600S antigen (human convalescent and postvaccination sera) and the 30S antigen (convalescent sera only). It has been shown that the various activities of the influenza viruses were affected by irradiation at different rates, indicating that they are based, at least in part, on different constituents of the virus particle. On account of these differences in the susceptibility of the various properties to ultraviolet light it was possible (a) to differentiate between the interference phenomenon as observed in the allantoic sac, and the development of non-agglutinability in red cells by either homologous or heterologous fresh virus, and (b) to separate individual steps involved in the mechanism of infection of susceptible host cells. The implications of these findings are discussed.

ANDERSON, S. G. (1947.) **The reaction between red cells and viruses of the influenza group. Studies with the Newcastle disease virus.**—*Aust. J. exp. Biol. med. Sci.* **25.** 163–174. **2180**

Red cells which have been treated with Newcastle disease virus become stable and much of the haemagglutinin is found free in the supernatant fluid. Such cells are non-specifically agglutinated by normal serum, and specifically agglutinated by anti-Newcastle disease serum, and by serum from cases of infectious mononucleosis. They will also cause agglutination when mixed with normal red cells.

In this paper experimental work leads to the conclusion that the virus particles are adsorbed on to the red cells leading to agglutination; after a variable time the majority of these virus particles elute leaving a small number permanently retained on the red cells. It is the latter which cause agglutination with specific serum, and which are capable of reacting with normal red cells.—N. W.

I. RICE, C. E. (1947.) **Studies of the complement-fixation reaction in virus systems. II. Activities of influenza virus antigens and antisera.**—*J. Immunol.* **56.** 343–356. [For part I, see *V. B.* **17.** 605.] **2181**

II. RICE, C. E. (1947.) **Studies on the complement-fixation reaction in virus systems. III. Equine encephalomyelitis virus antigens and antisera.**—*Cornell Vet.* **37.** 341–348. **2182**

I. The serological reaction between influenza

virus antigen and homologous human antisera was studied using the quantitative complement fixation technique described in "Standard Methods" (3rd Edition) by Wadsworth.

The method is based on the measurement of the amount of complement required to produce 50% haemolysis in the presence of the immune system being tested as compared with the amount of complement necessary to produce 50% haemolysis of the haemolytic system in the presence of either the antigen or antiserum alone.

The investigation showed that the fixation of complement by the virus and human antisera was amenable to quantitation. Examinations were made on convalescent sera and sera obtained during the acute stage of influenzal infection.

Selected pools of sera obtained from persons at that time free from respiratory infections were examined with the A and B influenza virus and conclusions were drawn on the epidemiology of the disease. The findings were also compared with the results obtained by virus haemagglutination tests. Certain differences, obtained by the two methods indicated the possibility that the two forms of titration may measure responses to different components of the influenza virus antigen.

II. R. investigates the application of the quantitative technique developed by the Division of Laboratories and Research, New York State Department of Health, for demonstrating complement fixing antibodies against the equine encephalomyelitis viruses. This follows on her previous similar investigations on vaccinia and influenza antigen antibody systems.

Special benefit is claimed for this quantitative method, which is based on the measurement of the amount of complement required to produce 50% haemolysis under the conditions of testing, in cases of low titred or anti-complementary sera.

Tests were performed on hyperimmune g. pig sera, horse and human sera as well as elk and buffalo sera using both eastern and western equine encephalomyelitis virus.—R. Coombes.

Brown, G. C. (1947.) **Studies on equine encephalomyelitis in Michigan.**—*J. infect. Dis.* **81.** 48–54. **2183**

Equine encephalomyelitis occurs annually in Michigan, but in 1943 an epidemic developed, confined mainly to Barry, Kalamazoo and St. Joseph counties. In the area concerned, 3·9 per thousand of the horses and mules were affected, with a mortality of 95%. The possibility that wild fowl in the area served as an inapparent reservoir for E.E. virus was investigated, the serum of 71 wild fowl from a 1,000-acre bird sanctuary in the centre of the epidemic area being tested for antibody by neutralization and complement-fixation tests. The latter test was in general less satisfactory than the virus-neutralization test in detecting evidence of previous contact with the virus. The Eastern type of virus was neutralized by the serum from a Formosan pheasant and two wild turkeys, and the Western type by the serum from two blue geese and a Lesser Canada goose.

Antibodies to the Eastern or Western viruses, or sometimes to both, were found in the serum of 9 of 11 horses in the epidemic area, and a strain of virus isolated from a fatal case was identified as being the Eastern type, confirming the presence of the Eastern type in Michigan, where prior to 1942 only the Western type had been identified.
—E. Cotchin.

Reeves, W. C., Hammon, W. McD., Furman, D. P., McClure, H. E., & Brookman, B. (1947.) **Recovery of western equine encephalomyelitis virus from wild bird mites (*Liponyssus sylviarum*) in Kern County, California.**—*Science.* **105.** 411–412. **2184**

From the nest of a yellow-headed blackbird (*Xanthocephalus xanthocephalus*) mites, identified as *Liponyssus sylviarum*, were collected.

The supernatant from centrifuged suspensions of the mites was inoculated intracerebrally into white mice which became ill or died within six days with symptoms of encephalitis. Serial passage in mice was made and the virus was identified by serum neutralization tests.

Virus was also isolated and identified from mites collected from the nest of a sparrow. These mites were identified as *L. sylviarum* and *Dermanyssus americanus*.—M. C.

Wirth, D. (1947.) Die Lungenentzündungen (besprochen am Beispiel der Lungenentzündungen des Pferdes). **[Inflammation of the lungs in horses.]**—*Wien. tierärztl. Mschr.* **34.** 265–276. **2185**

This is a lecture on some respiratory diseases of horses, the following being described *seriatim*:—croupous pneumonia or "Brustseuche", catarrhal pneumonia or broncho-pneumonia, and gangrene of the lungs. Treatment is detailed. Neosalvarsan is specific for "Brustseuche" and this effect is so certain that the response to treatment is diagnostic as well as curative. Broncho-pneumonia sometimes responds to sulphonamide therapy, otherwise the treatment of all kinds of inflammation of the lungs is by galenicals suited to the various pathological conditions present.—J. E.

Krishnamurti, R. (1945.) **A comparative study of rinderpest bull-goat-viruses, with a brief survey of the work done with rinderpest goat virus in Madras.**—*Indian J. vet. Sci.* **15.** 247–252. **2186**

A survey of the results of vaccination with goat-adapted virus in Madras. Originally two strains (Mukteswar and Madras) were used, but after 400 passages in local goats they were mixed and called Madras 2. This "mixed" strain has had 225 passages in goats and a fresh strain from Mukteswar 375 passages. Comparisons are made of the results of inoculating 139 young buffalo calves with the latter and 42 similar calves with Madras 2 strain. Of the 139 calves 23% died and of the 42 calves 16·7% died (mean 21·5). Apart from the high mortality in the experimental calves, there were also severe reactions in many others, all showing that the virus was not safe for field use. Incidentally, out of 479 young buffalo calves inoculated, for virus production with virulent virus, 236 (49·2%) died.

In field trials in 1932–41, some 200,000 inoculations—nearly all in clean areas—with goat vaccine were made in cattle and buffaloes. Reactions were severe, especially in buffaloes, although the total mortality was only 0·1%. Owing to the unpopularity of the method using vaccine alone, due to the severe reactions, serum is now given in amount just sufficient to avoid such reactions. Out of some 200,000 inoculations with sero-virus from 1937–42, in clean areas, the mortality was 0·02%.—F. C. Minett.

Wu, S. F., & Yen, P. S. (1944.) **[A new method of preparing rinderpest organo-vaccine.]**—*Chin. J. Anim. Indust.* **2.** 364–374. **2187**

Several cheap chemical substances such as winter green oil, salicylic acid, creosote, cosmos green B, were tried for attenuation of rinderpest virus in the preparation of organo-vaccine. Winter green oil proved most effective. It could be used instead of glycerol or chloroform.

—S. J. Chu.

de Mello, F. P. (1947.) La peste bovine dans les colonies portugaises de l'Afrique. **[Rinderpest in Portuguese African colonies.]**—*Bull. Off. internat. Epiz.* **28.** May. 163–165. **2188**

The author states that the only Portuguese territory in Africa which has been infected with rinderpest during the present century has been Portuguese Guinea. In that colony the disease was not definitely diagnosed until 1923 although it had probably been present since 1918. It was dealt with at first by police measures. In 1927 vaccination with bile was used. In 1936 formolized vaccine was used for the first time and very good results were obtained. In 1944 an aluminium adsorbate vaccine was used. It is claimed that the disease has now been eradicated, but that constant vigilance is necessary because of the danger of reinfection from neighbouring territories.—M. C.

Gopalakrishnan, V. R. (1945.) **Immunization of buffaloes against rinderpest in Assam.**—*Indian J. vet. Sci.* **15.** 253–255. **2189**

Rinderpest in Assam causes heavy mortality among buffaloes. The task of field immunization is difficult owing to the existence in different areas of different types of buffalo of very unequal susceptibility. A brief description is given of these types, some of them half-wild. Experience has shown that goat virus alone should not be used, the best results are obtained by combining goat virus with 30–40 ml. serum.—F. C. Minett.

Shope, R. E. (1947.) La préparation et l'emploi du "chick embryo vaccine" contre la peste bovine. **[The preparation and use of chick embryo rinderpest vaccine.]**—*Bull. Off. internat. Epiz.* **28.** May. 46–52. **2190**

This is a short account of the development of the avianized rinderpest vaccine at Grosse Isle during the war [see *V. B.* **16.** 262]. S. states that the Grosse Isle laboratory was closed down after the war without any workers from countries where rinderpest is endemic having been trained in the process of preparation. The virulent bovine virus was destroyed, the greater part of the stocks of vaccine were handed over to U.N.R.R.A. and the egg-adapted virus was sent to Hull (Canada) and to Washington (D.C.) to be stored in the frozen state. It has been kept there without subcultivation and S. fears that the strain may have been lost. If it should still be alive S. advises that it be sent to some country where research into rinderpest is in progress so that it may be maintained. An editorial note states that the Office International des Épizooties had no knowledge of the work carried on at Grosse Isle until the publication of the results in the *J. Amer. vet. Res.*—M. C.

Manninger, R. (1947.) L'épidémiologie et la prophylaxie de la peste porcine. **[Epidemiology and prevention of swine fever.]**—*Bull. Off. internat. Epiz.* **28.** May. 53–65. **2191**

In this general discussion M. considers that spread of infection is mainly by direct contact and brought about by movement of swine in the incubation stage of the disease. The flesh of infected pigs either in the raw or frozen state and even after it has been salted, cured or smoked, is also an important means of spreading infection. Spread by indirect contact seldom or never occurs and chronic carriers either do not exist or are of very minor importance. The virus although resistant in the dried or frozen state is readily destroyed by putrefaction.

The stamping out method of dealing with outbreaks is of value only in areas where pigs are kept in small numbers.

Quarantine measures combined with vaccination with an inactivated vaccine are of value in some areas where there is no large-scale movement of pigs. The only inactivated vaccine which is of value is the crystal violet vaccine.

In areas where pigs are kept in large herds, where there is a large trade in pigs and in pig products and where the disease is endemic the method of choice is systematic immunization with serum and virus. In such cases it is necessary that a fully virulent virus be used if satisfactory immunity is to be established.—M. C.

BRION. (1947.) La maladie de Carré. **[Distemper (canine).]**—*Rev. Méd. vét. Lyon et Toulouse.* **98.** 409–422. **2192**

B. describes deviations from the normal picture of canine distemper, considers recent advances in the study of the virus and immunology and methods of vaccination and treatment.

According to some authorities canine distemper became less common during the occupation years, perhaps owing to the decrease in numbers of dogs. B. finds that at present more than 50% of the dogs brought to his notice are affected by the disease.

Formerly most cases could be referred to the classic picture. In different years the different forms—respiratory, nervous, cutaneous and alimentary—predominated, but in general the respiratory form appeared the most frequently. The alimentary form was the most benign. For the last two years a disease, not responding to treatment and characterized by a febrile phase lasting for up to two months and culminating in death after a short period of nervous disorder has been noted. Sometimes death occurs without a marked febrile phase. The alimentary type of the disease appears in modified form with the virulence greatly enhanced, diarrhoea becomes haemorhagic and the death rate is high. Nervous symptoms are the only observable ones in other cases. The respiratory type of disease appears to be less common and less virulent. Different age groups are affected including puppies six weeks old.

The question of the identity of the disease arises, particularly as dogs appear to contract it on more than one occasion and vaccinated dogs which have had the mild disease may contract field infection after several months. Serum therapy appears to be unsuccessful.

In view of the differences from the normal distemper picture other diseases have been incriminated including that described by Pugh in 1937 and ascribed to a virus differing from that of distemper, leptospirosis and a variety of encephalomyelitis.

An account is given of Goret's method of vaccine preparation using spleen extract (from a ferret) adsorbed on aluminium hydroxide.

With reference to the polyvalence of Carré's virus, Laidlaw and Dunkin between 1926 and 1930 decided that there was one type of virus only. Nevertheless biological races of the virus can be demonstrated and the virulence for the primary host can be exalted by passage. In America this has been seen on fur farms with silver fox and martens when one or other of the species may be subject to epidemic attack. By 20 passages through ferrets the virulence for that animal may be enhanced to a degree where death follows infection in eight or nine days without the appearance of well-defined symptoms. Meanwhile the virulence for the dog is markedly decreased. In this way Green's method of vaccination was developed.

Goret *et al.* have worked on three strains of Carré's virus described by them as " virus fort ", " virus atypique " and " virus neurotrope ".

The polyvalence of the virus offers an explanation of the varying clinical pictures described.

The theory of immunity to the distemper virus is considered with a review of methods of vaccine preparation since 1924, leading to the serum-virus method of Laidlaw and Dunkin modified in France by Goret who used virus from ferrets. Using Goret's method 95% success in immunizing dogs is claimed. During the occupation period in France British vaccines were no longer obtainable and production in France was prevented by shortage of materials.

B. considers the newer methods of immunization, namely, the use of adsorbed virus and the use of virus passaged through the ferret (Green's attenuated virus). It is suggested that the dose of Green's virus recommended in America (15 mg.) if referring to 60 or 70 passage virus would be too virulent for use in France. It is suggested that ferrets in America may be different immunologically from those in France. Green's virus should be used with great caution. Of 46 dogs in which this virus had been used there were no records from twelve. Of the rest 29 reacted normally while five reacted violently and two needed treatment. In general the method succeeded with the small numbers under observation.

Drug therapy is useful against the secondary invaders and the curative use of Green's vaccine is mentioned.—S. BRIAN KENDALL.

BONNEY, V. (1947.) **Dogs and poliomyelitis. [Correspondence.]**—*Brit. med. J.* Dec. 27th. **2193**

Two Pekingese dogs belonging to B. developed partial paralysis of the hind legs and tail which

lasted for two months and was followed by recovery. Injury was ruled out as the cause and neither dog had symptoms of distemper. B. considers that the occurrence of such cases in dogs during an epidemic of human poliomyelitis is suggestive of a causal relationship.—M. C.

MacCallum, F. O. (1948.) **Human poliomyelitis and canine encephalitis. [Correspondence.]**—*Brit. med. J.* Apl. 10th. 705. **2194**

Attempts were made to infect distemper-immune dogs with a strain of human poliomyelitis virus obtained from a fatal human case in England during the 1947 epidemic. Three dogs were inoculated intracerebrally with 0·1 ml. of a 10% suspension of first passage poliomyelitis monkey virus and the material used was proved to be infective by passage into a further monkey. The dogs had no rise of temperature nor signs or symptoms of any kind. The dogs were killed on the 14th and 21st days after inoculation. Brain material was inoculated intracerebrally into five more dogs which were later killed and a further passage made into four more dogs. All these dogs remained perfectly well and no abnormalities could be detected on microscopic examination of the brains. Distemper-immune dogs therefore do not appear to be susceptible to the English strain of human poliomyelitis virus used in these experiments.—M. C.

Nelson, J. B. (1948.) **Studies on endemic pneumonia of the albino rat. III: Carriage of the virus-like agent by young rats and in relation to susceptibility.**—*J. exp. Med.* **87.** 11–19. [Author's summary copied *verbatim.* For previous parts, see *V. B.* **17.** 410.] **2195**

An attempt was made to reestablish the virus-like agent associated with rat pneumonia by the nasal instillation of the infectious material into supposedly normal young rats from the selected Princeton colony. The incidence of the pneumonia in these animals after the injection of suspensions of pneumonic lungs from either rats or mice was not significantly greater than the incidence under natural conditions.

In attempting to account for the refractory state of the immature rats it was found that the agent was widely dispersed through the breeding colony at an early age. Detailed tests of many litters indicated that the agent was acquired shortly after birth by way of the upper air passages as the result of maternal contact. In most instances it was so well tolerated by young rats during the suckling period and for several months thereafter that its presence was recognized only by nasal transfer to mice.

There is every indication that the rate of infection of rats in the breeding colony approaches 100 per cent by the time the animals are old enough to be used experimentally.

Hofstad, M. S. (1945.) **A study of infectious bronchitis in chickens. III. Attempts to utilize the chicken red cell agglutination test as a diagnostic aid in infectious bronchitis.**—*Cornell Vet.* **35.** 60–61. [For previous parts, see *V. B.* **16.** 11.] **2196**

No agglutination of red cells by infectious bronchitis virus was demonstrated in three trials employing different methods.—F. D. Asplin.

Golub, O. J., & Wagner, J. C. (1948.) **Studies on the interference phenomenon with certain members of the psittacosis-lymphogranuloma group of viruses.**—*J. Immunol.* **59.** 59–70. [Authors' summary slightly amended.] **2197**

Previous infection of embryonated egg tissues with the virus of meningo-pneumonitis was shown to interfere with the growth of psittacosis virus subsequently inoculated. The quantitative and time relationships were seen to be of prime importance in the successful demonstration of this phenomenon.

Meningo-pneumonitis virus partially inactivated by heat or inactivated by ultra-violet light irradiation retained properties of interference, reducing the yield of psittacosis virus in eggs as much as 99% in the case of the heated preparations.

Mice inoculated intra-abdominally with meningo-pneumonitis virus were shown to develop an increased resistance to subsequent inoculations of psittacosis virus within a very few days.

Under the conditions of the experiments, mouse pneumonitis virus did not show an interference effect against psittacosis virus in embryonated eggs or mice.

Golub, O. J., & Wagner, J. C. (1948.) **Interference between human pneumonitis virus and psittacosis virus.**—*J. Bact.* **55.** 627–636. [Authors' summary copied *verbatim.*] **2198**

Interference effects were demonstrated in mice when human pneumonitis virus (S-F strain) was inoculated by the intra-abdominal route followed immediately, or at short intervals, by psittacosis virus (6BC strain) inoculated by the same route. Although active S-F virus reached the brain within a few days under such conditions, the mice did not show an increased intracerebral resistance to psittacosis virus until a longer interval had passed, at which time the S-F virus in the brain was disappearing. The resistance was only slight and due probably to cross immunization.

When human pneumonitis virus was inoculated directly into the brains of immunized mice, no rapid increase in resistance to psittacosis virus by the intracerebral route was observed beyond

that engendered by the S-F immunizing injection. These results indicate that the mere presence of living S-F virus in the brain, shown by carrier studies, does not necessarily produce interference effects.

It would appear that cross-immunity studies between these two viruses are not complicated by the interference phenomenon when the intracerebral route is used for challenge. When the intra-abdominal route of challenge is employed, however, a resistance not entirely due to antigenic cross immunity may be found.

OLITZKI, L., CZACZKES, J. W., & KUZENCK, A. (1946.) **Endotoxic factors of *Rickettsia prowazeki* and their immunological relationship to the endotoxins of other Gram negative micro-organisms.**—*J. Immunol.* **53.** 365–370. **2199**

Experiments are described showing that white rats after five injections of heat-killed vaccines of *Proteus X*19, *Salmonella dysenteriae* and *R. prowazeki* give no further hypothermic reactions to the homologous vaccine, and that the bacterial vaccines protected the rats against such a reaction to *R. prowazeki* vaccine. Protection was also given against the lowering of the liver glycogen. On the other hand vaccines prepared from the Gram-positive organisms *Corynebacterium xerosis* and *Mycobacterium butyricum* did not produce typical hypothermic reactions, and did not immunize against *R. prowazeki* in this respect. The immunity produced by these heat-killed vaccines is considered "factor specific" rather than "species specific".

It is suggested that the morphological similarity between Gram-negative bacteria and Rickettsia is positively correlated with other characteristics of these organisms, and that the Rickettsia fall naturally among the Parvobacteriaceae, a group which includes both extracellular organisms with relatively complete enzymatic equipment (*e.g.*, Brucella group) and organisms which depend to some degree for their food supply on living cells (*e.g.*, *Haemophilus* group and certain Pasteurellae).—U. F. RICHARDSON.

LEUTHOLD. (1947.) Kommt die Kerato-Conjunctivitis infectiosa beim Rinde in der Schweiz vor? **[Does infectious kerato-conjunctivitis occur in cattle in Switzerland?]**—*Schweiz. Arch. Tierheilk.* **89.** 369–370. **2200**

Infectious kerato-conjunctivitis has not been known to occur in cattle in Switzerland, but recently an outbreak in cattle at pasture appeared to be typical of the disease.—C. AHARONI.

COHEN, S. S., & FOWLER, C. B. (1947.) **Chemical studies on host-virus interactions. III. Tryptophane requirements in the stages of virus multiplication in the *Escherichia coli*-T2 bacteriophage system.**—*J. exp. Med.* **85.** 771–784. [Authors' summary copied *verbatim*. For previous parts, see *V. B.* **17.** 602.] **2201**

The inhibition of virus multiplication by 5-methyl tryptophane can be specifically reversed by tryptophane. The conditions of reversal indicate that 5MT specifically interferes with tryptophane utilization. The tryptophane requirements of virus multiplication appear to exist throughout the latent period and determine the time of lysis and amount of virus liberated. A latent period may be interrupted for 15 minutes or more and be resumed on addition of tryptophane. Extended inhibition with 5MT results in a somewhat variable "killing" effect, the extent of which determines aspects of the reversal of the inhibition by tryptophane. The implications of these phenomena have been discussed.

*See also absts.* **2126** (typhus and TB.); **2236** (fowl paralysis); **2243** (rinderpest); **2318** (rinderpest in Tanganyika).

## IMMUNITY

DA ROCHA LAGÔA, F. (1945.) Imunidade e permeabilidade celular. **[Immunity and cellular permeability.]**—*Mem. Inst. Osw. Cruz.* **43.** 431–456. [English summary.] **2202**

The object of this investigation was the study of the significance of cellular permeability in relation to specific resistance and to the specific and non-specific production of the anamnestic reaction.

Drugs increasing cellular permeability such as testosterone, acetylcholine and the spreading factor of the staphylococcus lowered the resistance of mice to infections with the following organisms: *Bact. friedländeri*, *Pseudomonas pyocyanea*, *Salmonella enteritidis* and *Streptococcus pneumoniae*. Drugs tending to decrease cellular permeability such as atropine, adrenalin and calcium had no effect, while cortin, an extract of the suprarenal cortex, which tends to maintain normal permeability, increased the resistance against these infections.

None of these drugs was observed to have any effect on the production of the anamnestic reaction.—R. R. A. COOMBS.

CALTABIANO, D., & VASTA, S. (1940.) L'azione degli enzimi peptico e triptico sugli anticorpi. **[The action of peptic and tryptic enzymes on antibodies.]**—*G. Batt. Immun.* **24.** 9–16. [English, French & German summaries.] **2203**

Attack by peptic enzymes does not alter the agglutinin content of a specific serum; suitably prolonged tryptic attack will destroy the agglutinating antibody of a specific serum almost

entirely. Certain assumptions based on the above results concerning the nature of antibodies are discussed.—K. J. SINCLAIR.

STOERK, H. C., EISEN, H. N., & JOHN, H. M. (1947.) **Impairment of antibody response in pyridoxine-deficient rats.**—*J. exp. Med.* **85.** 365–371. [Authors' summary copied *verbatim.*] **2204**

Striking impairment of the antibody response to sheep erythrocytes was found in pyridoxine-deficient rats. Deficiencies in the three other B factors required by the rat, and low protein feeding, having effects on body weight comparable to pyridoxine deficiency, failed to influence the antibody response studied.

Confirming previous observations, a striking loss of thymic and lymphoid tissue occurred in the pyridoxine-deficient animals. A marked deficit in thymus weight also resulted from the feeding of a diet low in thiamin. Histologically, however, lymphoid atrophy was less pronounced in thiamin-deficient rats than in those deprived of pyridoxine.

—. (1948.) **Terminology of the Rh factor.**—*Lancet.* **254.** 329. **2205**

A board was appointed by the Surgeon-General of the United States Public Health Service to consider the nomenclature to be adopted for labelling commercial anti-Rh sera.

The board had to decide mainly between the nomenclature used by Wiener, whose theory of the inheritance of the Rh antigens depends on multiple antigens being determined by single genes and that of Fisher and Race, who stress the existence of three pairs of antigens, the antigens of each pair separately behaving as though they are the products of a pair of allelomorphic genes. These genes behave as though they are situated at three closely linked loci on a single chromosome.

The questions to be considered by the board included the factual basis for each hypothesis, the priority of the usage and the decision as to which nomenclature was simpler and therefore less likely to lead to mistakes in routine laboratory and transfusion practice.

The decision was to compromise by recommending that both terminologies should appear on the labels of anti-Rh sera.—R. R. A. COOMBS

HARDT, O. (1942.) Der Einfluss der Versuchstemperatur auf die Isohämagglutination im Ochsenblut. **[Influence of temperature on isohaemagglutination in bovine blood.]**—*Acta path. microbiol. scand.* **19.** 198–208. [In German.] **2206**

It has been suggested that the blood groups of cattle resemble those in man but further work has shown that the presence or absence of isoagglutinins in bovine blood may be very variable. In order to study this aspect of the question further, H. examined 50 blood samples taken from 25 cattle at the time of slaughter.

Two samples were obtained from each animal, one of which was kept at 37°C. and the other at 20°C. The temperature at which the serum was allowed to separate greatly affected the results. Thus in most cases isoagglutinins were detected in the 37°C. group but their presence often could not be shown in the corresponding 20°C. serum and when they were present in both, the titre was always higher with the 37°C. serum. In a few cases, type specific agglutinins were demonstrated only in the 20°C. group. Panagglutinins were present in some of the samples. —J. A. NICHOLSON.

BRUMPT, E. (1947.) Considérations défavorables à l'hypothèse de l'étiologie parasitaire de la jaunisse des muletons. **[Jaundice in newly born mule foals not caused by babesia infections.]**—*Ann. Parasit. hum. comp.* **22.** 5–10. **2207**

B. states that jaundice in mule foals has been known for a long time in parts of France. In Poitou it is estimated to occur in about 10% of mule foals, it also occurs in Savoy, Deux-Sèvres, the Hautes-Alpes and in Algeria.

Jaundice of the visible mucous membranes is observed soon after birth, there is often haemoglobinuria but fever is never present. Death often occurs on the first, second or third day after birth. If the foal lives for four or five days, it generally recovers rapidly. The mortality is about 50%.

Similar cases are not seen in horse foals nor in donkey foals. Certain mares habitually give birth to jaundiced mule foals, but when these mares are served by a horse their horse foals are not jaundiced.

Small numbers of *Babesia equi* have been recorded in blood films from affected foals in one case by Donatien, Lestoquard and Sauneau, in one case in Algeria by Barnet and in one case by Carpano. Maubaret (1932), in a thesis, claims to have seen *B. equi* in blood films from sick mule foals on 16 occasions. B. was unable to find piroplasms in blood films of four cases and he states that other workers have had the same experience. It had been suggested in the past that jaundice of mule foals is due to ante-natal infection with *B. equi.*

B. rejects this theory on the grounds that most workers have been unable to find the parasite in the blood, the affected animals have no fever, recovery when it takes place is rapid whereas in piroplasmosis it is slow, and because cases are never seen in horse foals although horses

are more susceptible to piroplasmosis than mules. B. has always considered that this disease in mule foals was comparable with icterus neonatorum in man. It probably results from immunization of the dam against the red cells of her mule foal [see *V. B.* **18.** 81].—M. C.

*See also absts.* **2130** (BCG vaccine); **2131** and **2132** (vole bacillus vaccine); **2147** (simultaneous immunization against blackleg and brucellosis); **2161** and **2162** (bovine contagious pleuro-pneumonia vaccine); **2175** (premunition in malaria); **2181** and **2182** (complement fixation in virus diseases); **2186-2190** (rinderpest); **2197** and **2198** (interference phenomenon); **2233** (papillomatosis in cattle); **2244** (Weltmann's reaction).

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

NICOLLE, P. (1941.) Appareil pour l'alimentation artificielle des réduvidés hémophages. [**An apparatus for the artificial feeding of reduvid bugs.**]—*Bull. Soc. Path. exot.* **34.** 179–185. **2208**

This is an apparatus for artificially feeding insects by making use of their alimentary thermotropism. They are attracted by warm objects whether these have any food value or not, and when near a warm object will project their rostra in an attempt to puncture it. The author calls this movement evoked by warmth the "thermorostral reaction". The apparatus consists of three parts. The container for nutrient liquid is a pyrex cylinder to whose upper end is fixed a thin, supple, rubber membrane, the lower end being closed by a rubber bung with three holes, two small and one large. Through the small-diameter holes pass two tubes, one of which is connected to a syringe for the purpose of filling the container with nutrient. Two burette clips on rubber tubing serve to close the tubes. The cylinder is filled with small glass balls in order to economize the nutrient. A thermometer is permanently fixed through a lateral opening. Into the third hole of the bung is fixed the neck of an inverted bottle; through this flows a current of warm water which comes from a glass coil immersed in a water-bath. A second glass coil kept partly in, and partly out, of the water-bath serves to regulate the temperature of the nutrient liquid. The cage for the insects is a simple glass tube widened at its lower end so that it is slightly larger than the external diameter of the pyrex cylinder. This end is covered over with fine gauze through which the insects will have no difficulty in feeding. The gauze is not stretched so tightly that it does not conform to the convexity of the rubber membrane of the container of nutrient, the liquid being put under slight pressure so as to make the rubber membrane bulge outwards. A folded filter-paper placed in the tube acts as a support for the insects which, although attracted by warmth, will not put their feet on a warm surface. The position preferred for feeding is the vertical, head downwards, their feet on the support. The upper extremity of the tube should be plugged lightly with cotton-wool if the specimens are able to fly.—J. R. SCOTT.

KERR, R. W. (1946.) **Control of fleas: Laboratory experiments with DDT and certain other insecticides.**—*J. Coun. sci. industr. Res. Aust.* **19.** 233–240. **2209**

In addition to details of tests carried out with D.D.T., thanite (secondary terpene-alcohol thiocyanyl acetate), lethane 384 (50% N-butyl carbitol thiocyanate by vol. standardized with kerosene), p-dichlorbenzene and naphthalene, there is a description of a method for rearing cat fleas (*Ctenocephalides felis*) in the laboratory. The effects of D.D.T. on larvae and adult fleas are described.

A dust containing D.D.T. did not prevent the development and hatching of flea eggs, but destroyed newly hatched and large flea larvae. Surface dusting with 30–50 mg. D.D.T. per sq. foot killed all larvae within 24 hours. A 5% D.D.T. dust applied at 50 mg. D.D.T. per sq. foot was effective against adult fleas. D.D.T. was much more effective than the other insecticides.

No tests were carried out against fleas on the living animal, the experiments being directed at finding means for control of fleas in buildings. —H. McL. GORDON.

ROBERTS, F. H. S., O'SULLIVAN, P. J., RUMBALL, P., & MCLAUCHLAN, A. W. (1947.) **Observations on the value of DDT for the control of the poultry stickfast flea, *Echidnophaga gallinacea* Westwood.**—*Aust. vet. J.* **23.** 148–152. **2210**

*E. gallinacea* was first reported in Queensland in September, 1941, and has been restricted to a relatively small area in the Boonah district, south-west of Brisbane.

A comprehensive series of tests of the effects of D.D.T. on this flea is described. Both preparations used, an emulsion and a suspension, were 100% lethal in concentrations of 4–5% D.D.T. applied as dips. Complete immersion of the birds was much more effective than immersion of the head and neck only.

*E. gallinacea* was apparently eradicated from one farm on which all birds were completely immersed (once) and the fowlhouse floor sprayed with 2% D.D.T. suspension.

Dogs remained free from the flea for 3–16 weeks after washing in 2% D.D.T.

A solvent naphtha emulsion, even in a con-

centration of 0·5% D.D.T. was decidedly toxic; a 2% suspension had no toxic effects in trials, but when applied for practical control there were some deaths. Egg taint was reported.

There were no toxic effects on dogs, but cats were highly susceptible.

It is concluded that eradication of *E. gallinacea* may be achieved by using D.D.T.—H. McL. G.

NORRIS, K. R. (1946.) **The testing of the American horn fly trap, and a new type of trap involving the use of DDT against the buffalo fly, *Siphona exigua* (de Meijere).**—*J. Coun. sci. industr. Res. Aust.* **19.** 65–76. **2211**

Following the spread of *Siphona exigua* to the east coast of Queensland and its extension to the dairying district on the Atherton Tableland considerable study has been devoted to methods of control. The origins of the fly population continually reinfesting a herd are discussed.

A trap of the type described by Bruce [see *V. B.* **10.** 96] for control of this fly was used and provided a reduction of more than 90% of flies in a dairy herd. A modified trap was developed which was easier to construct and did not require the use of wire gauze which has a short life. The new trap is described. It has a framework of the same general structure and dimensions as the type described by B., but instead of the gauze trapping boxes each panel of the sides is filled in with sheets of glass protected inside by wire and wire-netting. The roof of the trap is also of glass. On the inside of the glass roof and sides a deposit of D.D.T. is produced by spraying with a 4% solution in kerosene. Flies dislodged from the cattle passing through the trap are attracted towards the light, and come in contact with the D.D.T.-coated glass. The D.D.T. deposit remained toxic for at least ten weeks, and at the end of this period contact for a few seconds was sufficient to ensure death.

The two modifications of the trap are compared with reference to the effects of light on the flies, ease of construction and costs.—H. McL. G.

ANON. (1946.) **The new type buffalo fly trap. Uses D.D.T. on glass panels.**—*Agric. Gaz. N.S.W.* **57.** 444–446. **2212**

A description of the fly trap described by Norris [see preceding abst].

The trap is built into the fence of a cattle yard near the milking shed and if possible is placed so that cattle will pass through it both on the way into and out of the yards.—H. McL. GORDON.

LEGG, J. (1947.) **Recent developments in tick and buffalo-fly control.**—*Aust. vet. J.* **23.** 181–185. **2213**

Arsenical compounds were first used for tick control in Australia and their use extended later to other countries. A strain of *B. microplus* "resistant" to arsenic has appeared and spread in recent years. Dipping in D.D.T. emulsions and suspensions at concentrations of 0·25–0·5% was highly efficient against arsenic-resistant ticks and possessed considerable residual toxic effects. Preliminary trials with gammexane (benzene hexachloride, 666) gave promising results.

Control of the buffalo-fly, *Siphona exigua*, is discussed very briefly. The modified horn fly trap described by Norris [see preceding absts., also *V. B.* **17.** 294] is very effective in controlling this fly. Spraying of the predilection sites on the body with D.D.T. solutions or emulsions has also provided effective control.—H. McL. GORDON.

MACKERRAS, I. M. (1947.) **Recent developments in the control of cattle tick and buffalo-fly.**—*Aust. vet. J.* **23.** 185–189. **2214**

M. summarizes the work of the Council for Scientific and Industrial Research in the fields of control of these two parasites of cattle.

Emulsions containing 2% D.D.T. gave complete kills of ticks (*Boöphilus microplus*) and 10–12 days' protection from reinfestation by larval ticks. The nymph was the least susceptible stage. Repeated ingestion of D.D.T. by cattle, giving amounts greater than were likely to be absorbed from dips or sprays was harmless.

A proprietary suspension of D.D.T. known as "rucide" has given very promising results and may retain efficiency in dipping vats for periods of twelve months and more if care is taken to use soft water and keep the dipping plant clean.

A method to determine the amount of D.D.T. in samples from dips charged with "rucide" was developed and is described briefly.

Difficulties were experienced in obtaining complete kills of ticks on cattle in poor condition with rough, matted coats carrying heavy infestations. For cattle in good condition dipping in 0·35–0·55% D.D.T., repeated after 3–6 days will probably give a complete kill and the method could be used in "cleansing" cattle moving from infested into "clean" regions. Special attention to the ears may be necessary.

Preliminary work with gammexane in 0·05% suspension showed a higher and more rapid kill than could be obtained with D.D.T.

Control of *Siphona exigua* can be obtained by dipping cattle in 0·5% D.D.T. suspensions for not only is there a complete kill of adult flies but the skin remains toxic for a period greater than that required for development. Flies hatching from pupae in faeces are killed as soon as they attack the host animal. It appears that the parasite has been exterminated from several properties by a single dipping.—H. McL. G.

LAAKE, E. W. (1946.) **DDT for the control of the horn fly [*Siphona exigua*] in Kansas.**—*J. econ. Ent.* **39.** 65–68. **2215**

Cattle sprayed from above with a 0·2% suspension of D.D.T. from triple-nozzle broom sprays were protected against *S. exigua* by a first spraying for about two weeks. Subsequent sprayings gave increasingly long protection and four weeks' protection followed a fourth spraying in three herds. Comparable results were obtained by dipping cattle in a 0·1% suspension of D.D.T. but this was less economical.

Treated cattle gained on an average 50 lb. more per head than untreated controls. This treatment is expected to make possible the reopening of large grazing areas of Kansas which had long been abandoned in summer due to the depredations of this pest.—T. SPENCE.

BLAKESLEE, E. B., TISSOT, A. N., BRUCE, W. G., & SANDERS, D. A. (1947.) **DDT to control the Gulf Coast tick.** [*Amblyomma maculatum*].—*J. econ. Ent.* **40.** 664–666. [Authors' conclusions copied *verbatim.*] **2216**

From the results of two years' experiments it is concluded that a full-coverage DDT spray will control Gulf Coast ticks (*Amblyomma maculatum*) as effectively as the best ear smears so far developed. Since the tests were begun late in the season, the number of applications necessary for a full season's protection in the Southeast has not been determined. It seems unlikely, however, that the number would be more than for ear smears. Since the sprays applied have involved saturation coverage with high concentrations, the minimum effective dose has not been determined. However, a lower concentration of DDT than those used might be fully effective. The simplicity of this method, as well as the fact that it will control other blood-sucking parasites of cattle, such as mosquitoes, horn flies, stable flies, and lice suggests that DDT sprays against Gulf Coast ticks will come into general use in the near future.

GOUCK, H. K., & SMITH, C. N. (1947.) **DDT to control wood ticks.**—*J. econ. Ent.* **40.** 303–308. **2217**

The term "wood tick" includes the American dog tick, *Dermacentor variabilis*, the "lone star tick", *Amblyomma americanum* and the black-legged tick, *Ixodes scapularis*. D.D.T. emulsions (in pine-oil, xylene or velsicol, chiefly di- and tri-methyl naphthalenes) of different strengths were sprayed on to the ground, tick counts being taken before and after. It was found that 2–3 lb. of D.D.T. per acre were required in order to control *D. variabilis*, and 1 lb. of D.D.T. per acre gave adequate control against *A. americanum* up to 125 days. Pine oil, xylene and velsicol emulsions were all found to be effective and there was little difference between a large amount of dilute spray and a smaller amount of more concentrated spray. A D.D.T. dust was only slightly less effective. Aeroplane applications were less effective than ground applications against *A. americanum* (the most abundant species). Reductions in tick infestation developed more slowly than in the case of ground application, but after six weeks, there was about 85% control. Spray applications of about 1 lb. of D.D.T. in the same three solvents controlled *I. scapularis*.—BERYL A. THURSTON.

THORBURN, J. A. (1947.) **The control of ecto-parasitic infestations of farm stock with 'Gammexane', with special reference to the arsenic-resistant blue tick.**—*Empire J. exp. Agric.* **15.** 42–50. **2218**

Extensive dipping trials showed that gammexane at concentrations as low as 0·0025% could be used to control the arsenic-resistant "strain" of the blue tick, *Boöphilus decoloratus* on cattle, horses and goats, provided dipping at seven-day intervals was carried out, A working strength of 0·005% is recommended as being effective and safe. Composite dips containing prescribed strengths of gammexane plus arsenic proved no more or less effective against the tick than dips containing gammexane only when used at identical concentrations. When heavily infested cattle were treated they improved in condition, owing to the complete control of tick larvae obtained by the third or fourth weekly dipping.

Parallel tests conducted against *Rhipicephalus evertsi*, *R. appendiculatus*, and *Amblyomma hebraeum* indicated that for full control hand dressing was necessary in addition to regular dipping. A minimum concentration of 0·1% for the ears, and 0·25% for the anal region was found necessary for the hand-dressing work. Gammexane dips had no repellent action, so that the basis of control was to prevent complete engorgement at any stage of these multi-host ticks. Gammexane at low concentrations was successful also in the control of the following pests :– horn fly on cattle, fleas of dogs and poultry, lice and sarcoptic mange of goats, lice on pigs, bed bugs in human dwellings and flies in dairy premises.—L. DAVIES.

SMITH, C. N., & GOUCK, H. K. (1945.) **DDT to control ticks on vegetation.**—*J. econ. Ent.* **38.** 553–555. **2219**

Addition of an emulsifier is necessary to make an oil-in-water emulsion of D.D.T. dissolved in plain pine oil, but when soluble pine oil is used, an additional emulsifier is unnecessary. D.D.T. in soluble pine oil was used as a spray on vegetation infested with the "lone star" tick, *Amblyomma americanum*. Excellent control was achieved when

the D.D.T. was applied at the rate of 1 lb. per acre, and even 6 oz. per acre gave a large measure of control. Dusts of D.D.T. in pyrophyllite were less satisfactory. The addition of nicotine sulphate to the sprays had no obvious useful effect.—G. B. S. HEATH.

WISSEMAN, C. L., Jr., & SULKIN, S. E. (1947.) **Observations on the laboratory care, life cycle, and hosts of the chicken mite,** *Dermanyssus gallinae.*—*Amer. J. trop. Med.* **27.** 468–469. **2220**

Methods for collecting, feeding, storing and manipulating the mite *Dermanyssus gallinae* are briefly described. Captive mites were successfully fed on chickens, pigeons and English sparrows, but all attempts at inducing them to feed on man failed.—L. DAVIES.

*See also absts.* **2184** (bird mites and equine encephalomyelitis); **2316** and **2317** (various in Australia).

## PARASITES IN RELATION TO DISEASE [HELMINTHS]

JOHNSTON, T. H. (1946.) **The transmitting agent of the sheep liver fluke in South Australia.**—*J. Dep. Agric. S. Aust.* **50.** 194–197. **2221**

A description is given and the geographical distribution is discussed, of *Lymnaea* (or *Simlimnea*) the intermediate host of *Fasciola hepatica* in South Australia. In the eastern States of Australia the intermediate host is *L. brazieri.* The author discusses the habitat of these snails. —H. McL. GORDON.

PULLAR, E. M. (1946.) **A survey of Victorian canine and vulpine parasites. I. Material and methods in the investigation. II.** *Taenia multiceps, Taenia ovis* **and** *Echinococcus granulosus.* **III. Platyhelminthes other than** *Taenia multiceps, Taenia ovis* **and** *Echinococcus granulosus.* **IV. Nematoda. V. Arthropoda.**—*Aust. vet. J.* **22.** 12–21, 40–48, 85–90 & 112–118. **2222**

The survey was undertaken primarily to determine whether *Taenia multiceps* occurs in Australia, whether *T. ovis* occurs in foxes and if so to what extent this host is responsible for the spread of infection, to what extent urban dogs, rural dogs and foxes are infested with *Echinococcus granulosus*, and to what extent the fox is responsible for the spread of *Linguatula serrata.*

The material examined was collected from 174 urban dogs of mixed ages and breeding, 59 rural dogs and 81 foxes (*Vulpes vulpes*). In addition there was material obtained by dosing two dogs with arecoline and 56 dogs with nemural in rural areas. The greater part of the material from rural dogs was obtained by this anthelmintic treatment.

The type, number and location of parasites were recorded, and the findings are given according to incidence, degree of infestation, habitat and their relations to age, condition, sex of host and geographical distribution. Results are treated statistically.

*Taenia multiceps* was not found and a review of the literature leads to the conclusion that it is most unlikely that this parasite occurs in Australia. *T. ovis* was found in 1·7% of urban dogs, 5·1% of rural dogs and 13·5% of foxes. It is concluded that the fox is a normal host of this cestode, and is possibly more important than the dog in the spread of infection.

The incidence of helminth parasites is shown in a table. The following were found:—*T. hydatigena, pisiformis,* and *serialis, Dipylidium caninum, Diphyllobothrium erinacei, Toxacara canis, Toxascaris leonina, Uncinaria stenocephala, Trichuris vulpis, Protospirura gracilis.*

Many of the heavier infestations comprised immature worms.

A verrucose granuloma found at the bifurcation of the trachea of a dog resembled the lesions described in infestations with *Filaroides* (*Oslerus*) *osleri*, but no worms were present.

*Linguatula serrata* was found in 15·4% of foxes. No cases were found in urban dogs.

*Linognathus setosus* was found on 2·3% and *Heterodoxus longitarsus* on 2·9% of urban dogs. No *Trichodectes canis* were found.

*Otodectes cynotis* was found on 3·4% of urban dogs. *Demodex canis* was found on 1·7% of urban dogs. *Sarcoptes scabei* var. *canis* was not found during the survey, though known to be common in dogs in Victoria.

Fleas were found on 85·1% of urban dogs, and included *Ctenocephalus canis, C. felis* and *Pulex irritans.*—H. McL. GORDON.

LEIPER, J. W. G. (1947.) **The recurrence of nematode infections on "rested" pastures.**—*Vet. Rec.* **59.** 255. **2223**

An experiment was organized to test the part played by rabbits in the dissemination of nematode worms in order to indicate the fallacy of resting sheep-sick pastures as a means of reducing the risk of gastro-intestinal parasites.

Three plots of sheep pasture frequented by rabbits were fenced off, No. 1 with rabbit-proof netting and Nos. 2 and 3 with sheep-proof netting. Plots 1 and 2 were mown each year for four years and plot 3 was grazed with sheep for a similar period. A goat, reared so as to be free from intestinal parasites, was then put on each plot. Faecal examination indicated that the goats on plots 2 and 3 had a mild infection with *Nema-*

*todirus* spp. only, while no worm eggs were found in the faeces of the goat on plot No. 1. Four months later the goats were killed and the worms counted. The goat on plot No. 1 was almost free from worms, but in those on plots 2 and 3 there were found species of *Trichostrongylus*, *Nematodirus*, *Chabertia*, *Oesophagostomum*, *Capillaria* and *Trichurus* all of which are unknown in wild rabbits. In addition infection with *T. retortaeformis*—a natural parasite of the rabbit—was found in goats on plots 2 and 3.

The results indicate that rabbits can infect rested pastures with *T. retortaeformis*, and also, by mechanical transference, with eggs and larvae of various nematode parasites of sheep.—D. LUKE.

SARWAR, M. M. (1945.) **New records of nematode parasites from Indian ruminants.**—*Indian J. vet. Sci.* **15.** 286. **2224**

Three species are referred to, one of *Marshallagia* and two of *Haemonchus*.—F. C. MINETT.

VAILLS, L. (1946.) Microfilaires et dermatose estivale récidivante du cheval. [**Microfilariae and recurring dermatosis in the horse.**]—*Rev. Méd. vét., Lyon et Toulouse.* **97.** 65–72. **2225**

The author reports the frequent occurrence amongst horses in the southern coast region of France of a recurrent summer dermatitis clinically similar to that described in Normandy by Henry and Bory [see *V. B.* **8.** 40]. It is characterized by progressively confluent areas of alopecia extending from around the ears to the tail and generally restricted to the midline. Extreme pruritus is noted. Local applications of 2% sulphur dioxide in oil are beneficial but the lesions recur in subsequent summers. Microfilariae were found in the blood of six out of 32 affected horses examined once in April, May or June and the author suggests that these parasites, which he describes, may prove to be larval forms of *Setaria equina* which he found commonly in horses. Two likely vectors are either a *Simulium* sp., possibly *S. cinereum*, or, more probably, an unidentified species of *Microconops* (Chironomidae, Ceratopogoninae). He agrees that, so far, the evidence for the microfilarial origin of summer dermatitis is circumstantial and that further research work is necessary.—J. N. OLDHAM.

WHITLOCK, J. H. (1947.) **Ten per cent cunic for controlling gastro-intestinal helminthiasis in sheep.**—*Rep. N.Y. St. vet. Coll. 1945–46.* No. 14a. pp. 89–91. **2226**

3,690 sheep were dosed with 10% "cunic" solution (10% copper sulphate and 10% black leaf 40 tobacco), with no fatal results, but one lamb was narcotized for five minutes. Clinical helminthiasis was prevented when flocks were given an initial dose of phenothiazine or tetrachlorethylene followed by 10% "cunic" at the rate of 1 ml. per 10 lb. body weight. By using an apparatus described and illustrated in the text 445 sheep were dosed in 75 minutes. W. considers that the saving in time effected by use of 10% (instead of 1%) "cunic" more than compensates for any possible danger involved in the use of the more concentrated solution.—G. B. S. HEATH.

I. MACMANAMNY, L. F. (1946.). **The control of internal parasites in dogs.**—*Aust. vet. J.* **22.** 202–204. **2227**

II. PULLAR, E. M. (1946.) **The control of internal parasites in dogs.**—*Ibid.* **22.** 204–206. Discussion: p. 206. **2228**

I. The necessity is stressed for a correct diagnosis before anthelmintic treatment is adopted. Against cestodes M. used arecoline hydrobromide, nemural (synthetically prepared compound of oxyacetylaminophenylarsinic acid and methyltetrahydropyridine-$\beta$-carboxylic acid methyl ester) and "taenaline", the latter being less effective than the others. For treatment against ascarids, tetrachlorethylene, carbon tetrachloride, oil of chenopodium and butylphen (*p*-tertiary-butylphenol) are mentioned; the latter seemed to be of some promise. Tetrachlorethylene and butylphen are recommended for treatment of uncinariasis.

Attention is drawn to infestations with *Trichuris vulpis* which appear to be more common than previously noted. Greyhounds kept under close kennel systems are often infected. The symptoms include intermittent diarrhoea, later becoming continuous, chutney-like appearance of the faeces, anaemia in heavy infestations and eventually emaciation. Diphenylamine in 5–10 g. doses gave variable results.

General control measures are summarized briefly.

II. P. mentions the occasional cases in which arecoline and nemural act slowly or not at all and suggests that a vehicle of milk and treacle (9 : 1) may assist the purgative action.

The finding that *Diphyllobothrium erinacei* is a common parasite in foxes [see previous abst.] indicates that a careful study may show it to be present also in dogs.

He points out that *in utero* infection with ascarids is a likely cause of breakdown of control measures based on the usual methods of sanitation. The inclusion in the diet of fresh raw vegetables (particularly carrot) usually rids young puppies of infestations of ascarids.

A case of *Trichuris vulpis* infestation is discussed. Instead of being confined to the caecum as is usual the parasites were scattered throughout caecum and colon.—H. McL. GORDON.

I. GORDON, H. McL. (1945.) **Phenothiazine as an anthelmintic.**—*Aust. vet. J.* **21.** 90–95. **2229**

II. WHITTEN, L. K., & FILMER, D. B. (1947.) **A photosensitized keratitis in young cattle following the use of phenothiazine as an anthelmintic. I. A clinical description with a note on its widespread occurrence in New Zealand.**—*Ibid.* **23.** 336–340. **2230**

III. CLARE, N. T. (1947.) **A photosensitized keratitis in young cattle following the use of phenothiazine as an anthelmintic. II. The metabolism of phenothiazine in ruminants.**—*Ibid.* **23.** 340–344. **2231**

I. A general account of the use of phenothiazine is given.

Among the advantages of the drug for use in ruminants is the fact that it is effective irrespective of its destination in the digestive tract when swallowed. Other anthelmintics, excepting carbon tetrachloride, are not highly efficient unless swallowed into the abomasum.

Phenothiazine will not only cure the parasitic disease against which it is effective but it so reduces the output of worm eggs that the risk of re-infestation is greatly lessened. Illustrations of its efficiency are given with details of the residual worm burdens, and egg output, in sheep treated, (a) with phenothiazine which commonly kills 90% of *Trichostrongylus* spp. and (b) with copper sulphate-nicotine sulphate mixture which usually kills only 60% of these worms.

Among the disadvantages are the occurrence of unpredictable toxic effects, staining of wool, the bulky dose and the cost.

The precise mode of action is not known but phenothiazine itself appears to be the anthelmintic rather than a derivative. A number of related compounds have been tested, but none had the properties of such high efficiency and low toxicity. Setting aside the precise mode of action, it appears that the high degree of efficiency depends on its inherent toxic effects on worms—a property shared with all anthelmintics—its insolubility which ensures a high concentration throughout the alimentary tract, and the bulky dose which ensures an adequate dispersal and concentration in the environment of almost every worm. The opinion is expressed that if some other compound, the dose of which was equally bulky and which was equally or even more "insoluble", and which of course possessed intrinsic toxic properties for worms, could be found, it might be equally effective. A very "insoluble" arsenical compound might serve.

*See also absts.* **2316** and **2317** (various in Australia).

An estimate is made of the quantity of phenothiazine required during the year for anthelmintic use in Australia and a figure of 390 tons is quoted for sheep parasites, while full use for other animals may bring the total to 1,000 tons.

II. A number of cases of keratitis have occurred in young cattle in New Zealand following treatment with phenothiazine. The clinical signs, noted about 24 hours after administration of the anthelmintic, are lachrymation and slight oedema of the periorbitol skin, often involving the upper eyelid. In most cases a diffuse corneal opacity, about 1 cm. in diameter appears about 36–48 hours after dosing, but may be delayed for 60 hours. Photophobia is present but is not sufficiently severe to force animals to remain in the shade. If lesions do not develop beyond the stage of a diffuse opacity, recovery may be complete in 10–14 days, but if deep ulceration has occurred recovery is slow and a small scar may persist for 3–4 months.

The condition was produced experimentally in pigs and calves and could be prevented by protecting the eye from direct sunlight. Typical lesions were produced in calves exposed to direct sunlight for one hour at any time between 12 and 36 hours after dosing. If treated calves are kept in the shade on the day following administration of phenothiazine lesions do not develop.

III. C. reviews the properties of phenothiazine and its derivatives and previous observations on the metabolism of phenothiazine. Observations indicated that the absorption and excretion of phenothiazine by sheep and calves proceed along the following lines. Phenothiazine sulphoxide is formed in the alimentary canal and is absorbed into the portal blood; it is converted in the liver to leucophenothiazine which is conjugated to form the leucophenothiazine ethereal sulphate in which form it is excreted in the urine and bile. Some unconjugated leucophenothiazine and leucothionol are also excreted in the urine. Phenothiazine itself appears in the urine as a conjugate of undetermined nature. In calves regularly, and in sheep when the dose rate is high, the conversion of sulphoxide to phenothiazine in the liver is not complete and sulphoxide reaches the systemic circulation.

In young calves, less than six weeks old, leucophenothiazine is excreted in the urine in association with a peptide. The sulphoxide is able to enter the aqueous humour of the eye, and is thought to be the photodynamic agent in the photosensitized keratitis in calves dosed with phenothiazine.—H. McL. GORDON.

## SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

SEIBOLD, H. R. (1946.) **An embryonal mixed tumor in the lungs of a calf.**—*J. Amer. vet. med. Ass.* **108.** 157–160. **2232**

An abattoir specimen of one lung of a 12-weeks-old calf contained numerous soft, solid or cystic yellowish-grey tumour nodules, varying from 2–10 mm. in diameter, and composed of small and medium-sized undifferentiated cells, striped muscle fibres, and tubular structures lined by cuboidal epithelium, and a stroma of loosely arranged connective tissue. Striated muscle fibres were also found in the attached lymph node, which was somewhat enlarged.

The possibility that the tumour nodules represented metastases from a primary growth elsewhere (*e.g.*, embryonal nephroma) was raised, but at the abattoir the rest of the viscera were reported to have been normal.—E. COTCHIN.

POST, R., & TERPSTRA, J. I. (1947.) De oorzaak en de genezing der papillomatose van het rundvee. [**The treatment of papillomatosis in cattle.**]—*Tijdschr. Diergeneesk.* **72.** 391–397. [English summary.] **2233**

The authors demonstrated that filtrates of papillomas from cattle were infective to cattle, producing growths similar to Shope's rabbit papilloma; the results of the experiment supported the theory that antibodies are produced in an infected animal.

Cattle usually recover in spring when on pasture. The results of one experiment appeared to indicate that vitamin A, proteins and minerals are of importance in the control of the disease.

—E. V. L.

SWAHN, O. (1945.) En statistisk bearbetning av talgkörteladenomens förekomst hos hund med hänsyn till kön och ålder. [**Sebaceous adenomata in dogs. Statistical study with reference to sex and age.**]—*Skand. VetTidskr.* **35.** 629–635. [Abst. from English summary.] **2234**

On the basis of his own observations and those of DE GRAAF (1943) on the effect of sex hormones on the sebaceous glands, S. has made a statistical study of a number of cases of sebaceous adenoma in dogs, taking into consideration their connexion with sex and age. The material, taken from the journals of the Department of Pathology at the Veterinary College and the State Veterinary Institute in Stockholm, covers a period of nearly 14 years (1931–45).

Of the total 209 cases, 15 were unproductive of information and 19 cases of relapse (all male dogs) were also excluded. Of the remaining 175 dogs, 168 were male and seven female, the average age being 9·58 years. No particular breed predisposition was observed. 72 % of the adenomata were in the anal region, 15 % on the back, head, prepuce, limbs and abdomen, and in the remaining 13 % only "skin tumours" were reported.

—F. E. W.

OPIE, E. L. (1947.) **Normal structure and degenerative changes of the cytoplasm of liver cells and of tumor cells derived from them.** —*J. exp. Med.* **85.** 339–346. [Author's summary copied *verbatim.*] **2235**

Discrete bodies which may be designated cytochondria occupy the greater part of the cytoplasm of liver cells. A part, but not all, of these bodies have the characteristics of mitochondria. They consist of a rim which stains deeply and a central part which stains faintly or remains unstained.

In liver cells about portal spaces, in foci of regeneration, and in tumor cells the rims of the cytochondria stain with basic dyes and contain ribonucleic acid or related substances.

With increasing accumulation of basophile substances about cytochondria as the central veins are approached, these bodies aggregate to form clumps or orient themselves with palisade-like arrangement in two rows just within the margins of the liver cell columns.

With aggregation of the cytochondria that are surrounded by basophile material, other cytochondria in the same cells are devoid of this material and wholly acidophile.

With chromatolysis (disappearance of basophile substance) caused by dimethylaminoazobenzene (butter yellow) cytochondria lose their peripheral basophilia and stain only with acid dyes. When ribonucleic acid is removed from fixed liver tissue by ribonuclease, cytochondria lose their affinity for basic stains and become acidophile.

Of the cytochondria that are surrounded by ribonucleic acid or related substances part have the characteristics of mitochondria.

Under the influence of butter yellow cytochondria may become greatly swollen and intensely acidophile in the center though they retain their basophile rim. These swollen bodies in part at least have the reactions of mitochondria.

In tumor cells of hepatomas mitochondria are smaller and less abundant than in parenchymatous cells of the liver, and accompanying them are bodies of similar size which do not react as mitochondria.

The cytochondria of hepatomas produced by butter yellow undergo acidophile degeneration similar to that of liver cells and form swollen

spherical bodies with basophile rims. With partial or complete loss of basophile substance, these altered cytochondria may form conspicuous cell inclusions.

IYER, S. G., & HASHMI, Z. A. (1945.) **Avian leucosis complex (fowl-paralysis) in India.**—*Indian J. vet. Sci.* **15.** 284–286. **2236**

A survey, by means of histological methods and covering only exotic breeds, showed the existence of fowl paralysis on organized poultry farms in widely-separated parts of India. In one flock the disease was responsible for 25% (139) of the losses in adult fowls during a period of three years, while in one area the disease had apparently been spread by stock from a central farm. The presence of the disease in native stock has still to be established.

The symptoms and lesions were typical of the disease as seen in Great Britain, the forms met with being visceral (which predominated), neural, ocular and osseous.—F. C. MINETT.

*See also abst.* **2320** (the biological problem of cancer).

## NUTRITIONAL AND METABOLIC DISORDERS

KEENERE, H. A., PERCIVAL, G. P., & MORROW, K. S. (1944.) **Cobalt treatment of a nutritional disease in New Hampshire dairy cattle. A preliminary report.**—*Sta. Circ. N.H. agric. Exp. Sta.* No. 68. pp. 8. **2237**

An account of the history and geographical distribution of a disease causing loss of condition, depressed or depraved appetite, constipation or diarrhoea, rough hair coat, scaly skin and muscular inco-ordination. The symptoms are most acute during the late winter and the condition is alleviated by spring pastures.

The circular speaks of prevention and treatment by drenching with small doses of cobalt sulphate, one teaspoon to one tablespoon of a solution containing one oz. of the salt dissolved in one gal. of water is recommended, the solution being administered in drinking water or as a drench.—G. L. BAILEY.

GERRITSEN, H. J. (1946.) Rapport over een bemestingsproef met koperslakkenbloem ter bestrijding van de zoo gevreesde lik-(lek)zucht of "teeuwsigheid" bij het vee tengevolge van een gestoorde koperhuishouding op rivierkleigrond te Bergharen (Land van Maas en Waal). **[Report of a manuring test with ground basic slag rich in copper in an effort to control pica in cattle at Bergharen.]**—*Tijdschr. Diergeneesk.* **71.** 709–720. [English summary.] **2238**

G. reports on the use of finely powdered basic slag rich in copper as a fertilizer for the control of severe pica in cattle grazed on river clay pastures which were flooded during the war. Though no copper deficiency in the soil could be established by a test consisting of growing *Aspergillus niger* in such soil there was a distinct deficiency of copper in the vegetation and in the blood serum of cattle grazed on or fed hay from these pastures. The low copper content (62 $\mu$g. %) of the serum rose to 96 $\mu$g. % when the animals were grazed on pastures treated with this slag. The symptoms of pica present in the stabled animals and also in those on the untreated pastures, disappeared, and there was a marked increase in milk yield when the animals were run on plots so treated, but the symptoms returned and the milk yield dropped when the stock were transferred to untreated plots.

The grass on the treated plots appeared more palatable and the yield was considerably increased in quantity and quality. Though the slag contained no nitrogenous material the luxuriant growth and the colour of the vegetation resembled that of a pasture treated with a nitrogenous fertilizer. The treated plots were grazed closely and evenly and animals from adjoining untreated plots kept breaking through the fences into the treated plots. The composition of the slag was :– Cu 1·2%, Pb 0·9%, Zn 7·3% [shown thus, but should be 0·73%]. [No mention is made of cobalt.] The analyses of grass samples of treated plots were delayed owing to post-war conditions. There are several tables giving particulars of milk yields and analyses of blood serum. The amounts of copper slag applied per hectare are given.

—P. L. LE ROUX.

LEE, H. J., & MOULE, G. R. (1947.) **Copper deficiency affecting sheep in Queensland.**—*Aust. vet. J.* **23.** 303–309. **2239**

Evidence is presented that copper deficiency occurs in sheep in Queensland as a result of which the wool is defective, with loss of normal crimp and an abnormal straight, lustrous appearance ("steely", "stringy" or "silky" wool).

In the absence of adequate copper the wool of black-wooled sheep was deficient in normal pigmentation. Analyses of blood and liver samples from affected animals and of pasture samples are given, the figures for copper being low.—M.C.F.

HARRIS, L. J. (1947.) **All the vitamins.**—*Brit. med. J.* Nov. 1st. 681–684. **2240**

A list is given of the known vitamins, their different forms and modifications and the signs and symptoms of the diseases to which a deficiency of each individual vitamin gives rise. The review

is divided into three sections, namely, the vitamins needed by man, those probably or possibly needed by man, and those needed by experimental animals but whose significance for man is uncertain.—E. M. CRUICKSHANK.

*See also absts.* **2316** and **2317** (in Australia); **2321** (Biological standardization of vitamins—textbook).

## DISEASES, GENERAL

VAYSSE. (1946.) Evolution des principales maladies épizootiques au Maroc de 1942 à 1946. **[Review of the chief epizootic diseases in Morocco, 1942-1946.]**—*Bull. Off. internat. Epiz.* **25.** 223–229. **2241**

The diseases dealt with are anthrax, blackquarter, bovine pasteurellosis, bovine contagious abortion, swine fever, foot and mouth disease, rabies, piroplasmosis and trypanosomiasis.

The most important observations include:—the occurrence of epizootics of anthrax in goats for which the standard vaccines proved ineffective, but for which a special vaccine was prepared at Casablanca; the decline in the incidence of blackquarter, ascribed to the use of vaccines; the value of killed vaccines in contagious abortion; serious outbreaks of swine fever, with a mortality rate of 95%, following the landing of American troops, ascribed to the feeding of swill; the recurrence of a malignant form of foot and mouth disease in 1944–45; and the value of novarsenobenzol [neoarsphenamine] in the treatment of dourine. The persistence of dourine in Morocco is said to be due to donkeys and low value mares forming a reservoir of infection. No case of infection due to the service of a horse stallion treated with neoarsphenamine has been observed during the last decade. In one case, a donkey stallion relapsed six months after treatment. As a precaution, previously infected animals used for breeding are given periodic injections of naganol [suramin].

—U. F. RICHARDSON.

SHCHEPILOV, N. S. (1945.) Pravil'no planirovat', svoevremenno vypolnyat' protivoepizooticheskie meropriyatiya. **[Planning and execution of anti-epizootic measures.]**—*Veterinariya, Moscow.* No. 1. pp. 6–7. **2242**

Anthrax, blackleg, swine fever, swine erysipelas and other infectious diseases cause considerable losses among domestic animals in Siberia. Regional veterinary stations deal with such infections and supervise appropriate sanitary and preventive measures. In 1942 every regional veterinary surgeon was provided with a special register to record details concerning such specific diseases, and forms for despatch to the regional zootechnical department. After the control measures here described were instituted there was a considerable decrease of infectious diseases in domestic animals.—K. A. ALLEN.

LALL, H. K. (1946.) **Geographical distribution and seasonal incidence of main contagious diseases in the Punjab.**—*Indian Fmg.* **7.** 129–132. **2243**

Records for 12 years (1932–44) for rinderpest, foot and mouth disease, haemorrhagic septicaemia and blackquarter have been analysed. [Similar statistics for a large part of the former United India have been under examination at Mukteswar since 1940.] The reported number of rinderpest outbreaks has declined while the other diseases show no appreciable decrease. There is more rinderpest in December and January, foot and mouth disease in April-June (dry and hot), haemorrhagic septicaemia in August-September (rainy), blackquarter in August-October. These seasonal differences are more or less significant [least so with rinderpest]. Outbreaks of all diseases on animal population and area basis were 3·84 [should be 3·94] per 10,000 bovines and 2·54 [should be 35·4] per 100 sq. miles. Outbreaks are fewer in the cooler and more hilly parts.

—F. C. MINETT.

OJEMANN, J. G. (1942.) De reactie van Weltmann. **[Weltmann's reaction.]** — *Tijdschr. Diergeneesk.* **69.** 549–552. [English, French and German summaries.] **2244**

O. noted the absence of records that Weltmann's reaction [serial dilutions of the serum under test put up in 5% $CaCl_2$ in distilled water and heated at 100°C. in a water bath for 15 minutes, coagulation or its absence being looked for] had been investigated in diseased domestic animals. The technique is described briefly and the value of the reaction in certain human diseases is reviewed. The test was applied in such animal diseases as tuberculosis, Johne's disease, traumatic gastritis, fascioliasis and mastitis in cattle; cystitis, nephritis, pneumonia, sepsis, distemper and macerated foetus in dogs and in acute laminitis etc., in equines. The reaction was by no means constant in any one disease and he concludes that the test was of little value in veterinary practice.

—P. L. LE ROUX.

PULSFORD, M. F. (1947.) **The correlation of field and laboratory work in routine diagnosis.** —*Aust. vet. J.* **23.** 18–22. **2245**

This article is intended to bring the field worker and the laboratory worker into closer understanding by pointing out the difficulties each group encounters and the responsibilities of each to the other. Three main subjects are dealt

with :– the clinician's field report with specimens ; the selection and preparation of specimens ; and the pathologist's report on his findings.

It is stressed that the pathologist's report should comprise findings, a summary of the work done as an index of the reliability of the findings and an opinion of the significance of these findings. The clinician can then add his own field evidence and make a final diagnosis.

The clinician's report must contain all the information likely to be of importance to the laboratory worker in assessing his findings and in indicating the amount of work done on the specimens.

Considerable emphasis is laid on the selection of suitable material for laboratory examination and its preparation for dispatch to the laboratory.

—D. C. Blood.

Getty, R. (1946.) **The histopathology of a focal hepatitis and of its termination (" sawdust " and " telang " liver) in cattle.**—*Amer. J. vet. Res.* **7.** 437–449. [Also appeared in *Vet. Student, Iowa.* **9.** 139–151. **2246**

Eighty-two livers affected with telangiectasis were examined. The distribution and other concurrent lesions, including parasitism, such as could be seen from a general carcase inspection were also noted.

Livers were obtained from slaughtered beef and dairy cattle, superficial and deep samples being taken. Glycogen depositions were estimated and sections examined.

The entire lesion was a focal hepatitis and the use of the terms " telang " and " sawdust " merely serve to represent different stages in the process. Serial sections seemed to indicate that the lesions were at first periportal and that the causal agent gained entrance by way of the portal tract although the author emphasizes that the cause of the condition is unknown. Sex incidence was proportionally equal and the condition occurred in animals of all ages, from six-month-old calves upwards.—L. M. Markson.

Jensen, R., Frey, P. R., Cross, F., & Connell, W. E. (1947.) **Telangiectasis, " Sawdust," and abscesses in the livers of beef cattle.**—*J. Amer. vet. med. Ass.* **110.** 256–261. **2247**

Two experiments were carried out to determine when the conditions referred to as " telang " and " sawdust " liver and also abscesses in the liver develop in fattening cattle. In the first, 125 yearling Hereford heifers were fattened. At the beginning of the experiment and at intervals thereafter of approximately 40 days, 20 beasts were selected at random and slaughtered and their livers examined. In the second experiment 120 Hereford steers 18 months old were divided into six groups of 20 each. The animals in group one were slaughtered at the outset, those in groups two to five were slaughtered in that order, one group every 40 days, while being fattened, while in group six were the controls fed on a maintenance diet, ten of them being slaughtered after 120 days and the other 10 at the end of the experiment.

The authors conclude that abscesses develop from the 80th to the 120th days of the fattening stage and that under conditions of fattening, telangiectasis develops early, abscesses late.

They further indicate the following sequence of changes :– Telangiectasis develops first ; histopathologically it resembles haemorrhagic infarction ; its cause is unknown. The lesion may heal or may become transformed into " sawdust " by disintegration of the contained erythrocytes and infiltration by leucocytes. As telangiectasis contains necrosed tissue, it is a medium favourable for the production of abscesses through the agency of *Fusiformis necrophorus*. Ulcers of the alimentary tract may provide *F. necrophorus* with an entry to the liver by way of the portal circulation.

—L. M. Markson.

Sténson, B. (1945.) Plötsliga dödsfall hos nötkreatur i samband med traumatiska förmagsskador. **[Sudden death in cattle from the effects of traumatic gastritis.]**—*Skand. VetTidskr.* **35.** 622–628. [English summary.] **2248**

A description of the findings in six bovines all of which had died suddenly. P.M. it was found that in each case there was traumatic gastritis, with resultant complications. In five there was perforation of the left gastro-epiploic artery, in the sixth death was caused by haemato-pericardium after perforation of the right coronary artery.

—F. E. W.

Arkhangel'skiĭ, I. I. (1945.) Klinicheskie proyavleniya enzooticheskoĭ pneumonii telyat v Kazakhstane. **[Enzootic pneumonia of calves in Kazakhstan.]**—*Veterinariya, Moscow.* No. 1. pp. 16–17. **2249**

The illness is usually non-febrile and usually lasts up to two weeks.—K. A. Allen.

Roos, O. K. (1939.) Klinische Ergebnisse bei vollständigen und unvollständigen Lähmungen der Nachhand des Hundes mit besonderer Berücksichtigung der sogenannten Dackellähme. **[Clinical study of posterior paresis and paralysis in dogs especially in Dachshunds.]**—*Inaug. Diss., Munich.* pp. 67. **2250**

Records from the small animal clinic at Munich during the years 1924–37 show that of the 17,825 cases 248 or 1·39% of dogs examined were affected with posterior paralysis. Of these dogs 69% were dachshunds. Paralysis was commonest in the 4–7 years of age group.

In a subsequent period 17 cases under R.'s care were subjected to thorough clinical examination and detailed case records are given, including interesting observations on reflex action. All but four of these dogs were eventually destroyed. Thirteen of these cases were dachshunds and one a sealyham terrier, and R. lays emphasis on the fact that in these breeds the length of the dog is greater than its height: this he believes may be a predisposing factor. This theory was borne out to some degree in that in seven of these long-backed dogs there was caseation and in one case exostosis of the intervertebral disc of the 2nd-3rd lumbar vertebra with resulting compression on, and local degenerative changes in, the spinal cord. Evidence of the vertebral lesion was visible on X-ray examination. Nephritis was another common P.M. finding.

Aetiology and treatment are discussed. Little response was obtained to drugs, with the exception of "phlogetan" [a breakdown protein product] and strychnine which however gave only limited relief. Massage and electrical stimulus are indicated for treatment.—C. W. OTTAWAY.

VUKELIĆ, E. (1946.) Pojava koštanih kod konja i psa. **[Incidence of bone fractures in horses and dogs.]**—*Vet. Arhiv.* **16.** 32–44. [English summary.] **2251**

From data collected over a period of five years at Zagreb and 20 years at Giessen, the number of fractures of the principal bones in horses and dogs and the percentage of fractures in each class are tabulated and shown graphically. There was an increasing total incidence from 3·4% in 1923 to 4·7% in 1943. There is a seasonal peak in July-August. The incidence shown differs widely from earlier data. The discrepancy is ascribed to improved diagnosis through X-ray and to increased accident risk from heavier motor traffic, particularly in summer.—K. J. SINCLAIR.

*See also abst.* **2316** (in Australia).

JUNGHERR, E., & MATTERSON, L. D. (1944.) **Avian monocytosis, so-called pullet disease.**—*Proc. 48th ann Meet. U.S. Live Stk sanit. Ass., 1944.* pp. 185–196. **2252**

The incidence, symptomatology, pathology, blood chemistry and haematology are described. A degree of monocytosis has been noted in all the cases examined and "Avian Monocytosis" is suggested as a suitable name for the condition. The different theories of causation are discussed. The authors were unable to confirm that the condition was caused by a virus [see WALLER, *V. B.* **18.** 113] and consider that the true aetiology of the complex is unknown. Control measures are discussed and the use of potassium salts in treatment is recommended. The potassium salts apparently alleviate renal damage but the ultimate evaluation of such treatment requires extended field trials.—D. LUKE.

## POISONS AND POISONING

ÅGREN, G. (1945.) Om orsaken till förgiftningssymtomen vid förtäring av stångkorv tillverkad av binjurar. **[Cause of poisoning after ingestion of sausages made from adrenal gland tissue.]**—*Skand. VetTidskr.* **35.** 95–101. [English and Swedish summaries.] **2253**

Food poisoning in man occurred in Stockholm in 1944, after ingestion of sausages made from beef adrenal gland tissue. Bacteriological examination of the suspected batch of sausages for pathogenic bacteria or toxins was negative and a careful investigation proved that the sausages contained almost exclusively adrenal gland tissue. As in sausage manufacture the ingredients are subjected to rapid heating and cooling, with a weak acid reaction, it could not be supposed that the adrenalin would be destroyed but only the enzymes which inactivate the hormone, and as the broth after boiling is added to the sausage, the extracted hormone should be present in the finished product. On the other hand the results of earlier experiments have indicated that adrenalin poisoning following oral administration of the hormone should be rare, as VINCENT *et al.* (1897) gave 200 mg. adrenalin *per os* to dogs and 45 mg. to rabbits without any visible secondary effects. HERTER *et al.* (1902) found that the hormone was not destroyed in the alimentary canal but decomposed in the liver after absorption. It was therefore decided that the adrenalin content of the sausages must be investigated.

In preliminary experiments at a temperature of 20°C. with liquid extract from the sausages adrenalin was found in fairly high concentration. The results of the determination by colour development were values corresponding to 0·32 mg. adrenalin per ml. of extract and 0·70 mg. adrenalin per 2·2 ml. of extract, which is equal to 70 mg. per 100 g. of sausage.

In experiments on animals, rats and mice were fed on the suspected sausages for a period of five days, being given only water in addition. The rats had diarrhoea even on the first day (a symptom which was also present in the affected human beings) and the mice all died after three to four days. No signs of infection or other pathological changes were observed in the abdominal organs P.M. Control groups of rats and mice were fed

for the same period on (a) ordinary bought sausages alone, and (b) ordinary bought sausages, to which had been added 100 mg. adrenalin per 100 g. sausage. The rats fed on diet (a) showed no sign of disturbances during the test. The mice, however, were already showing signs of disturbances in their well-being during the first two to three days and sweating all over the body. By the fifth day this symptom had partly disappeared and they seemed to be thriving on the monotonous diet. The symptom of sweating all over the body had been observed also in the mice fed on the suspected sausages, when it was incorrectly assumed to be connected with the adrenalin contained in the sausage. The rats and mice fed on diet (b) reacted in the same way as those fed on the suspected sausage. The rats had diarrhoea during the first day and both died, in this case, on the fifth day. The mice began sweating even on the first day in the same way as the two earlier groups, and all five died in the course of three days.

The fact that diarrhoea was common to the affected human beings and the animals in the experiment appears to support the suspicion that adrenalin was the cause of the disturbances. The deviation from the findings of VINCENT *et al.* may have had several contributory causes. The fact that in the case under discussion the adrenalin was given simultaneously with food may have facilitated absorption of the hormone and a not insignificant part of the adrenalin may be assumed to have by-passed the liver. Moreover the results of the control experiment with adrenalin-free sausage indicated that the latter apparently contained some factor which produces sweating in mice. The possibility cannot be excluded that this factor might enhance the effects of the adrenalin. It may even be supposed that some toxic product, formed by the breaking down of the adrenalin during or after absorption, had caused the poisoning symptoms.

As there is at present no prohibition of the use of adrenal glands for the manufacture of sausages, and as long as there continues to be a great demand for adrenals from drug manufacturers, there will remain a certain risk of fairly large consignments of these glands which have been kept in cold storage being inadvertently included among pork butchers' supplies.—F. E. W.

BARRON, N. S., & KIDD, A. A. (1947.) **A case of ergotism in calves resembling foot-and-mouth disease.**—*Vet. Rec.* **59.** 575–576. **2254**

Calves at pasture developed lesions on the muzzles and feet, accompanied in some cases by a temperature of 105°F. The lesions on the muzzles and on the feet were considered to resemble those of foot and mouth disease; the foot lesions consisted of raw surfaces on the coronets, deeply under-run and accompanied by necrosis; in some cases by haematoma-like swellings.

Some of the rye-grass on the pasture was affected with ergot. It is suggested that the disease in the calves was ergot poisoning.—E. COTCHIN.

FARR, M. M., & JAQUETTE, D. S. (1947.) **The toxicity of sulfamerazine to chickens.**—*Amer. J. vet. Res.* **8.** 216–220. **2255**

Rhode Island Red and New Hampshire fowls, 16–43 days old, were fed, over a seven-day period, on a mash containing 0·125% to 1·5% of sulphamerazine or were dosed daily with 0·5 g. capsules.

All groups given the treated mash with sulphamerazine at levels higher than 0·25% and the group given 0·5 g. doses daily had a lower live weight increase than the controls, this retardation being due to the unpalatability of the mash and to toxic effects of the drug. Spleen lesions were present in a few birds receiving 0·25–1·5% and in four of the five birds which received 0·5 g. daily. Spleen lesions were more prevalent in 43-day-old birds than in birds 16–30 days old.
—H. PAVER.

HARRISON, C. V. (1947.) **Fatal poisoning by "Lethane" insecticide.**—*Brit. med. J.* May 24th. 722. **2256**

A case report of what is believed to be the first example of fatal poisoning in a human being by lethane insecticide. The dose was judged to be 0·07 ml. per kg. of lethane 384 (N-butyl carbitol thiocyanate) and 0·206 mg. per kg. of lauryl thiocyanate. No characteristic P.M. lesions were observed; the dilated right heart, congested viscera and pleural petechiae indicated that death was due to respiratory failure.

In view of the toxicity of lethane insecticide as evidenced by the case now reported it seems highly desirable that such preparations should be clearly labelled "Poison".—H. PAVER.

*See also absts.* **2230** and **2231** (phenothiazine photosensitization); **2316** (plants and flowers in Australia).

## PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease group section.)

GOLDBERG, D. I., edited by. (1944.) **[Stimulation in healing wounds. A summary of two years' work on problems of the stimulation in healing wounds with ointments containing embryonic emulsions.]** pp. 184. Tomsk: The V.M. Molotov Medical Institute. [English summary.]

[Abst. in *Bull. War Med.* **6.** 124, copied *verbatim.* Signed: J. N. DAVIDSON.] **2257**

This little book by the staff of the Tomsk Medical Institute gives an account of two years' work on the stimulation of the healing of war wounds by ointments containing embryonic emulsions. The embryos were taken from rabbits, guineapigs, cattle, sheep, or pigs, and were finely minced under aseptic conditions. 200–250 parts of the mince were finely mixed with 100–150 parts of castor oil and 3–5 parts xeroform. Oil [castor oil, linseed oil or cod liver oil] or soft paraffin up to 1,000 parts was then added, and a fine emulsion or ointment prepared by intimate mixing. All the materials were sterile, and all manipulations were conducted aseptically. The final emulsion or ointment was stored in the cold, and used within a month. It was applied to the wounds on sterile gauze bandages, and the dressings were changed every 2–4 days.

A detailed account is given of the effects of such ointment on various types of wounds. It was found to be of use in fresh and normally healing wounds, and in wounds where granulation and epithelialization were deficient, in amputation stumps and in compound fractures in the absence of osteomyelitis. It was also useful for packing bone cavities, and for treating varicose ulcers, trophic ulcers, bed sores, ulcers due to frostbite, burns, ulcerative stomatitis and gingivitis, and ulcers of the female genital tract. Its use was contra-indicated in acute inflammations, in the presence of large amounts of pus or necrotic material, and in wounds containing foreign bodies.

PROBEY, T. F., & PITTMAN, M. (1945.) **The pyrogenicity of bacterial contaminants in biologic products.**—*J. Bact.* **50.** 397–411. **2258**

Blood plasma and other blood products when used for intravenous therapy may cause thermal reactions owing to contamination with live or dead bacteria. The authors examined for pyrogenicity 28 cultures of such organisms isolated from blood or plasma from several laboratories. All these organisms produced fever in rabbits, but varied in their thermogenic characteristics. Recommendations concerning the carrying out of the thermal test are given.—E. KLIENEBERGER-NOBEL.

I. ALIEV, G. K. (1943.) Komplexnde lechenie naftalanom Boevykh pourezhdeniy, ikh oslozhneniy i posledstviy. **[The treatment of war injuries with naphthalene.]**—*Khirurgiya, Moscow.* **13.** No. 10. 3–7. **2259**

II. MAMEDOV, Z. M. (1943.) K. Voprosu o primenenii naftalana pri lechenii raneniy myagkikh tkaney. **[Treatment of wounds of the soft tissues with naphthalene.]**—*Ibid.* 7–11. [Abst. in *Bull. War Med.* **5.** 223, copied *verbatim.* Signed: IAN AIRD.] **2260**

I & II. Since its introduction as a wound dressing by Professor Mamedov in 1933, naphthalene has been widely used in Azerbaidjan. Its popularity as a surgical dressing has increased since the beginning of the war. Pure naphthalene is applied directly to the wound and to the surrounding skin surface in a layer whose thickness lies between 0·3 and 0·5 mm. Its beneficial effect seems to be increased by an elevation of local temperature; for this, Aliev advises daily irradiation of the naphthalene-covered area by quartz lamp; Mamedov prefers the immersion of the dressed part daily in a bath at 36°–37°C. The effect of naphthalene on the wound flora appears to be bacteriostatic rather than bactericidal, but, in addition, it produces a healthy hyperaemia of the tissues, relieves pain, reduces oedema, and promotes epithelialization. Its effects seem to be dependent upon a local reduction of pH.

WILKINSON, A. G., & ZINNEMANN, K. (1947.) **Allergy to penicillin with symptoms of serum sickness.**—*Brit. med. J.* Nov. 29th. 865–866. **2261**

A single case of urticaria and angioneurotic oedema following penicillin therapy is reported. The syndrome occurred on two occasions about a fortnight after the administration of the penicillin.

Intracutaneous tests with crude (yellow) and pure (white) penicillin indicated that the impurities were the cause of the condition.—J. D. R.

KELNER, A., & MORTON, H. E. (1947.) **Two antibiotics (lavendulin and actinorubin) produced by actinomyces. I. Isolation and characteristics of the organisms.**—*J. Bact.* **53.** 695–704. [Authors' summary copied *verbatim.*] **2262**

Two strains of *Actinomyces* have been isolated which produce substances that appear to be different from previously described antibiotics. One of these new substances has been named *actinorubin*, the other *lavendulin*.

A description of the two strains of *Actinomyces* is given as well as conditions of growth for maximum production of the antibiotic substances.

The bacterial spectrum [name used by the author for a table giving the bactericidal power of these two antibiotics for certain micro-organisms] of actinorubin and lavendulin is given. The two substances appear to be different from each other and from streptomycin and streptothricin.

Much greater resistance of *Escherichia coli* to streptomycin could be developed than resistance to actinorubin or lavendulin.

NEGRO, G. (1941.) Controllo batteriologico del

potere disinfettante dei saponi. **[Bacterial test for the disinfectant properties of soaps.]**—*G. Batt. Immun.* **27.** 549–556. [English, French and German summaries.] **2263**

A bacterial culture in agar was applied to surfaces washed with water and with the soap under test. Counts were made of colonies developing on the soaped and non-soaped surfaces. In experiments described the survival of *Staphylococcus aureus* was reduced by three soaps ( (i) contained oil and alkali, 72%, (ii) was a toilet soap, (iii) was stated to be a national Italian soap known as Tergina) to 1·15%, 0·39% and 0·15% respectively.—K. J. SINCLAIR.

*See also absts.* **2118** (anatoxin for staphylococcal infections); **2167** (drug fastness in trypanosomiasis); **2172-2174** (coccidiosis treatment); **2176** (blood transfusion for anaplasmosis); **2185** (pneumonia in horses); **2229-2231** (phenothiazine).

## PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

BARCROFT, J., & BARRON, D. H. (1945.) **Blood pressure and pulse rate in the foetal sheep.**—*J. exp. Biol.* **22.** 63–67. **2264**

A description is given of a method for measuring foetal blood pressure which can be applied instantly and with the minimum amount of manipulation. The apparatus consists of a hypodermic needle to which is attached a piece of bicycle valve tubing about one metre in length. The system is filled with heparin-Ringer solution by means of a funnel and the tube closed with bull-dog forceps. After delivery of the foetus into a bath of warm saline, the needle is inserted into the desired blood vessel, the forceps removed and the height at which the column of liquid is maintained above the foetal heart represents the pressure. The height is measured by means of an ordinary wooden scale held in the hand.

The needle method registered a slightly lower pressure than the mercury manometer since the needle measures the pressure in the blood stream whereas the mercury manometer measures the pressure in a closed vessel. If the vessel is ligated beyond the needle, the measurement recorded by the two methods is essentially the same. The manipulations required to insert the cannula of an ordinary mercury manometer into a blood vessel may cause a rise of blood pressure. The direction of the needle in the blood vessel has little or no effect on the pressure recorded.

The pressure in the umbilical artery gradually rises during gestation from about 6 mm. Hg. at the 43rd day to about 50 mm. Hg. at the 145th day. The pressure in the umbilical vein likewise shows a gradual rise from about 5 mm. Hg. to 18 mm. Hg. at term. It was also observed that the pulse rate quickens from about 80 per minute to 200 per minute at the 70th–80th day, after which it gradually falls to about 100 per minute at term. Vagal control is established early in gestation, for division of both vagi was followed by a quickened pulse rate. The earliest date on which vagal stimulation caused slowing of the heart was the 77th day. Slowing of the heart, corresponding to the rise in blood pressure at the 111th day, was also observed. The foetal heart also responds to the administration of adrenalin. At term, both the carotid sinus and depressor reflexes are fully established.—J. A. NICHOLSON.

ESPE, D. (1947.) **Some observations on nerve regeneration in the udder.**—*J. Dairy Sci.* **30.** 9–12. **2265**

To investigate further the mechanism of "letting down" of milk, E. performed a complete udder transplant in an attempt to destroy all nerve pathways to the mammary gland. The gland of a six-week Holstein heifer was dissected free of the body except for one external pudic (mammary) artery and was then reversed and sutured to the body. When the skin lesion had healed a second operation was performed and the artery previously left intact was ligated. The heifer was bred as soon as possible and nursed her calf and a foster-calf. Electrical stimuli revealed one functional quarter to be still devoid of sensory nerve supply. Milk volumes obtained from the quarters before suckling were compared with those obtained following suckling of the quarters which had regained their nerve supply and the results indicated that a nerve-endocrine mechanism rather than a direct nerve reflex was responsible for the letting down of milk.—C. W. OTTAWAY.

NONIDEZ, J. F. (1946.) **Afferent nerve endings in the ganglia of the intermuscular plexus of the dog's oesophagus.**—*J. comp. Neurol.* **85.** 177–189. **2266**

Examination of the intermuscular plexus of the oesophagus of the dog has revealed the presence of subcapsular afferent nerve endings, with flattened branches, in the ganglia. These arborizations arise from fibres running with the vagus nerve; in small ganglia they may be single, in larger ganglia multiple. Again it is possible for a single fibre to supply endings to several ganglia. It is concluded that their presence in the oesophagus may be associated with the feeding habits of this animal, in that they may initiate reflexes to protect the ganglia against excessive pressure during swallowing of large masses of food and to cause regurgitation even before the food has reached the stomach.—C. W. OTTAWAY.

GREGG, D. E. (1946.) **The coronary circulation.** —*Physiol. Rev.* **26.** 28–46. **2267**

This article reviews experimental procedures and recorded results on the complex problem of the cardiac circulation. Emphasis is placed on the necessity for experimenting under "normal" conditions and, in the opinion of the author, observations made in the open-chest on an otherwise intact animal should provide the most satisfactory results. [Consideration must also be given to the anatomical distribution of the coronary vessels in the species chosen for experiment.]

—C. W. OTTAWAY.

ERKOL, M. (1937.) Işten evvel ve sonra beygir kaninda süt asidi miktarinin tayini. [**Lactic acid determination in the blood of horses before and after work.**]—*T. C. yük. Zir. Enst., Ankara.* No. 48. pp. 1–40 + 1–40. **2268**

A series of 52 tests carried out on horses of both sexes and different ages at rest gave values of 10–15 mg. % lactic acid in the blood, with variations of 20 mg. % to 7 mg. %. Three horses were used in experiments to determine the corresponding value after one hour's alternate trot and gallop: before work the figures were 9·45–13·05 mg. % and after work were 40·3–125·6 mg. %. An interval of three and a half hours' rest after work was required before the lactic acid content of the blood returned to the normal value.

—E. V. L.

DURAN-JORDA, F. (1946.) **A micro-incineration study of the flat epithelial layer covering the alimentary tract.**—*Brit. J. Surg.* **33.** 346–352. [Author's summary copied *verbatim.*] **2269**

The author has demonstrated by using the micro-incineration technique, the organic nature of the flat epithelial layer, previously [1945] described by him, which covers the gastric and intestinal mucosae and the gall-bladder mucosa.

SHERGIN, N. P. (1940.) Dykhanie spermy. [**Respiration of spermatozoa.**]—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 156–179. **2270**

The methylene blue method was used to establish the depth of penetration of oxygen into the semen and the intensity of respiration; the quantity of oxygen absorbed by the semen under varying conditions was ascertained by use of the Warburg apparatus. The experiments were mostly conducted at 20°C. but some examinations were made at 37°C. and 10°C.

The intensity of respiration depends on the concentration of spermatozoa in the semen; equal volumes of ram, bull, boar and stallion semen use the same amount of oxygen. Lack of oxygen shows an effect very soon after ejaculation, intensity of respiration at 20°C. is greatest two to two and a half hours after ejaculation but soon decreases to about one-half; an increase in temperature from 10°–20°C. increases the respiration 2–3 times but there is a rapid decrease at body temperature, accompanied by a slowing-down of metabolic processes and degeneration of the spermatozoa. An acid reaction always produces a decrease in respiration and dilution of the semen of bulls, boars and stallions with isotonic saline solution also decreases respiration. Oxygen diffuses deeper than air into the semen but does not increase the intensity of respiration.—K. A. A.

WISLOCKI, G. B., & DEMPSEY, E. W. (1946.) **Histochemical reactions in the placenta of the cat.**—*Amer. J. Anat.* **78.** 1–45. **2271**

Following a review of placental topography, cytological features, as demonstrated by a variety of histo-chemical reactions and techniques, are discussed. Acid and alkali phosphatases were present in the syncytial trophoblast. No trace of glycogen was found in the placenta, a finding which the authors suggest may be associated with the nature of the endometrial circulation. Iron was present only on the periphery of the placenta, due most likely to maternal blood extravasation. Features of the uterine wall are also described. Comparisons are drawn with the findings in other species.—C. W. OTTAWAY.

HARRIS, H. A. (1948.) De formatione ovi et pulli. [**Radiographic study of the formation and expulsion of the egg in fowls.**]—*Brit. med. J.* March 27th. 585–586. **2272**

A series of five excellent X-ray photographs illustrates the process of formation of the egg shell within the hen.

The first trace of calcium deposition in the shell becomes visible about six and a half hours after the laying of the last egg. By 12 hours the outline of the shell is distinct with the pointed end of the egg in advance. At twenty-three and a half hours after the laying of the last egg the pointed end of the new egg is still in advance. During the twenty-fourth and twenty-fifth hours the egg rotates on its vertical short axis and the blunt end presents to the cloaca. The question of how and when this rotation takes place is discussed.—M. C.

ROMANOFF, A. L. (1944.) **Hydrogen-ion concentration of albumen and yolk of the developing avian egg.**—*Biol. Bull.* **87.** 223–226. **2273**

Observations were made on changes in hydrogen ion concentration in albumen and yolk of incubated eggs of hen, pheasant, bobwhite quail, turkey, duck and goose. The pH value was determined electrometrically using a hydrogen electrode and observations were made on the albumen until it was merged with the yolk sac, and on the yolk until hatching time. In the species studied the changes were similar and suggest a

pattern which may be characteristic for all avian eggs.

In the albumen there was a rapid rise in pH from 7·6 to 9·5 at the beginning of the incubation, followed by a fall. In the yolk there are two fractions, dense and liquefied, at different stages of incubation. The pH of the dense yolk is at first about 6·0, later rising to about 7·8 near the end of the period, then decreasing slightly at the time of hatching. The liquefied yolk during its existence maintains an average pH value of about 7·7.

The age of the egg at the time of incubation is important—fresh eggs give low, while older eggs give high pH values of albumen.—E. M. J.

*See also abst.* **2323** (colour atlas of haematology—textbook).

PEASE, M. (1947.) **How long do poultry breeding stock live?**—*J. Minist. Agric. Lond.* **54.** 263–266. **2274**

An analysis was made of the wastage of all breeding stock used in two experimental flocks during the years 1943–46. The mortality figures point to the conclusion that in poultry females are more viable than males; 36% of the females lived through their second breeding season, as against only 13% of the males. With females, the leading factor in wastage was poor egg score; non-specific disease was the factor next in importance, but it accounted for only 17% of the females as compared with 37% of the males.—J. D. B.

## PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

BANERJEA, R., & SEN, A. K. (1946.) **The bacterial content of the Calcutta milk supply: suggested milk bacteriological standards.**—*Indian med. Gaz.* **81.** 40–45. **2275**

The authors examined 202 samples of raw milk collected from different places in Calcutta and the average bacterial count was about 22 million per ml. In summer the average count of 137 samples was about 30 m. per ml. while in winter the average of 65 samples was about 7 m. Only 4·4% of the samples in summer and about 26% in winter showed 0·2 m. bacteria or less per ml. Six per cent. of the samples in summer and 40% in winter reduced methylene blue within five hours. The "coliform" test was done mainly in summer and only 3·2% of the samples were satisfactory. Samples of pasteurized milk gave a total bacterial count sometimes similar to that of raw milk, the average varying between 0·37 m. per ml. to 33 m. per ml.

As there are no bacterial standards fixed in India at present, the authors propose that these should be fixed after 3–4 years' experience with model dairy farms managed by Government. Meanwhile the authors suggest some provisional standards for India. These are that raw milk should contain not more than 2 m. bacteria per ml., should not reduce methylene blue in less than five hours, and should contain no coliform organisms in 1 ml. or less; pasteurized milk should contain not more than 10,000 bacteria per ml., should not reduce methylene blue in five hours or less and should contain no coliform organisms in 1 ml. or less.—M. M. HUQ.

ANON. (1947.) Australie. Les Services vétérinaires de l'Australie au 1er juillet 1946. [**Australia. The Australian veterinary services as at 1st July 1946.**]—*Bull. Off. internat. Epiz.* **27.** 60–78. **2276**

This useful account has been prepared by Henry, M. The numbers of horses, cattle, sheep and pigs in Australia in 1945 are given and compared with the figures for other countries namely the U.S.A., New Zealand, China, Japan, British India, and the Dutch East Indies. Sheep totalling 105,370,868 are by far the most numerous species. Pigs are relatively unimportant, there being only 1,630,855.

There is no unified veterinary service, each of the six States having its own service.

Regulations concerning import and export of livestock and livestock products are administered by the Federal Government of the Commonwealth and all meat for export is inspected by employees of the Commonwealth government.

Importation of animals and birds is very strictly controlled and a list of the countries from which the various classes of animals, birds and bees may be imported, is given. The list is quite a restricted one: for example, the import of poultry is permitted only from Great Britain, Northern Ireland, Éire and New Zealand. No livestock may be imported into Australia by aeroplane.

The functions of the Division of Veterinary Hygiene of the Dept. of Health, Canberra, of the Dept. of Commerce and Agriculture, of the Council of Scientific and Industrial Research, and of the departments of the states are outlined. The organization of the veterinary schools at the Universities of Sydney, Melbourne and Queensland is also described. At Melbourne only the first year course is available at present. Students proceed to Sydney for the remainder of the course.

The whole gives a very useful précis of veterinary affairs in Australia.—M. C.

CONNELL, R. (1947.) **The practice of veterinary medicine in a veterinary service district in**

**Saskatchewan.**—*Canad. J. comp. Med.* **11.** 33–45. **2277**

This is a report of the officer in charge of a veterinary service district having an area of about 1,200 square miles. The cattle population is in excess of 20,000 plus an unestimated number of horses, swine and poultry. Cattle practice constituted 48% of the work, horse practice 23%, small animal practice 13%, hog practice 9%, poultry 3% and miscellaneous 2%. The paper contains six tables with explanatory notes which list the conditions met with in each class of animal, and also a general discussion of bovine malignant catarrh.—T. MOORE.

REGNÉR, G. (1944.) Fran Strandvägen via Karlavägen till Kräftriket. [**History of the Veterinary College of Stockholm.**]—*Skand. VetTidskr.* **34.** 157–175. [English summary.] **2278**

The author traces the history of the Veterinary College in Stockholm from its beginnings in 1820 in Southern Stockholm, in poor and inadequate buildings under the name "The Royal Veterinary Establishment, Stockholm", this being altered in 1867 to "The Royal Veterinary Institute".

Although proposals were put forward in 1860 for better premises, new buildings to the North-West of Stockholm were only begun in 1875 and completed in 1880.

The school was moved to a new building in 1912 and two years later the name was changed to The Veterinary High School.—F. E. W.

*See also abst.* **2322** (milk and milk sanitation—textbook).

ANON. (1944.) Die Entwicklung des Tierarzneiwesens in Basel-Stadt 1740–1940. [**The development of the profession of veterinary science in Basle 1740-1940.**]—*Schweiz. Arch. Tierheilk.* 86. 442–446. **2279**

An abstract of studies presented in 1940 by H. Adam for a doctor's degree in the Medical Faculty at Basle. The development of veterinary practice is described, tracing the steps taken for training and examining students. An account is given of the development of the public veterinary service.—E. COTCHIN.

MACKENZIE, P. Z. (1947.) **The part played by the animals of the Sudan with the allied armies, 1940-46.**—*J. R. Army vet. Cps.* **19.** 13–17. **2280**

Livestock from the Sudan were supplied to the forces in many parts of the Mediterranean area and the Middle East. Horses, mules, camels and donkeys for riding and transport and cattle, sheep and goats for meat supply. Cattle were supplied from December, 1941, beginning at the rate of 3,500 cattle and 10,000 sheep monthly but increasing to a peak supply of 5,000 cattle and 12,000 sheep a month. 15,000 camels were supplied in 1941 and 1942 for the invasion of Abyssinia. Losses were very heavy and it is estimated that 9,000 of these camels did not survive the campaign. Fat camels for meat were exported to Egypt for slaughter for civilian use; it is stated that these numbered "many hundreds of thousands".

—M. C.

## REPRODUCTION AND REPRODUCTIVE DISORDERS

MILOVANOV, V. K. (1940.) Zadachi rabotnikov iskusstvennovo osemeneniya v bor'be za darvinizm. [**Artificial insemination in fight for Darwinism.**]—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 5–22. **2281**

The Mendelian theory of inheritance is rejected and the Darwinian theory of evolution by a gradual process of improvement as a result of inheritance of acquired characters under the influence of environmental factors is accepted. The fact that the majority of the spermatozoa introduced into the genital tract of the female are destroyed before they can reach the ovum is taken to be evidence of pre-selection of the spermatozoa.

Destruction of spermatozoa increases as they pass forward in the genital tract. It is claimed that artificial insemination, by introducing the semen further up the genital tract than occurs in normal service, increases the chances of survival of the spermatozoa.

M. does not accept the generally held view that only one spermatozoon fertilizes the egg but believes that fertilization requires many spermatozoa and that consequently the increased survival rate as a result of artificial insemination is advantageous.

He believes that the more the ovum and the spermatozoa differ from each other the more strongly they will be attracted and envisages the bringing together of very widely unrelated germ cells by means of artificial insemination; for example, spermatozoa from Jersey bulls with ova of Highland cows.

He says that experimental work with plants has demonstrated the advantages to be obtained in this way and anticipates that similar advantages are to be expected with animals.—K. A. ALLEN.

KEDROV, V. K., & LIKHACHEV, A. N. (1940.) Iskusstvennoe osemenenie kobyl s kontrolem ovulyatsii. [**Artificial insemination of mares with control of ovulation.**]—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 253–269. **2282**

In 1937 experiments were carried out on 600 mares to determine the time of ovulation by rectal

palpation of the ovaries and the time and duration of the oestrous cycle. Various pathological lesions of the genital organs (cysts, sclerosis, atrophy of the ovaries, etc.) were present in 101 mares.

Prior to artificial insemination, the mares were all tested for oestrus with a " teaser " stallion and the ovaries were palpated *per rectum*. Oestrus averaged seven days and in 71% of 317 mares ovulation commenced between the fourth and eighth days. 332 mares were inseminated with undiluted and 268 with diluted semen, each mare receiving from one to nine inseminations, although about 50% were given only one, or two: the number of spermatozoa in the semen had been calculated in each case and it was ascertained that 1,000 millions produced pregnancy in 47%, 1,000–2,000 millions in 60% and over 2,000 millions in 72% of the inseminated mares.

—K. A. ALLEN.

PANYSHEVA, L. V., & KOZENKO, T. M. (1940.) O ratsional'noĭ konstruktsii iskusstvennoĭ vaginy dlya khraka. **[Construction of an artificial vagina for use in artificial insemination in swine.]**—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 246–248. **2283**

A description and an account of the use of two types of " artificial vagina " for the collection of semen from boars. One was 35 cm. and the other 40 cm. long, ejaculates averaging 269 ml. were collected with the former and averaging 420 ml. with the latter type. Pulsation of water through the vagina was found to be unnecessary.

—K. A. ALLEN.

ZAL'TSMAN, A. A. (1940.) Poluchenie spermy u oslov. **[Collection of donkey semen.]**—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 249–252. **2284**

The use of an artificial vagina was tried successfully. The quality and quantity of semen obtained was much higher than that obtained from the vagina following natural copulation of donkeys on mares.

During the experiments the donkeys showed reasonable willingness to serve. Service was vigorous and the prevailing opinion, that during copulation with mares, donkeys become only slowly excited, could not be confirmed.—K. A. A.

KHRONOPULO, N. P. (1940.) Rezul'taty transportirovki spermy byka v kolkhozakh Molochanskovo GPR. **[Results obtained with transported bull semen on Molochan collective farms.]**—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 108–117. **2285**

The semen used in these experiments was collected from two bulls kept on a high protein diet and was transported undiluted in test tubes maintained at 8°–12°C. to farms up to 80 km. distant, being diluted on arrival. The cattle were inseminated with one ml. diluted semen, some of them twice during a 24-hour period.

224 ejaculates were used to inseminate 876 cows of which 454 bore 224 male, 169 female calves and 29 of unreported sex. Thirty-two aborted. The fertilizing efficiency of single insemination was 59·8% and 71·5% for double insemination.

—K. A. ALLEN.

NAGORNYĬ, E. P., & SMIRNOV, I. V. (1940.) Opyt osemeneniya ovets kapsul'nym metodom. **[Insemination of sheep by the capsule method.]**—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 152–155. **2286**

Insemination was made 5–15 minutes after the semen had been obtained, in capsules containing 0·2 ml. and 0·4 ml. of undiluted semen. The fertilizing efficiency was 71·3% compared with 71·7% by injection and 73·6% by natural insemination. Capsules containing 0·2 ml. semen gave an efficiency of 71·3%, whereas 0·4 ml. capsules resulted in 81·1% fertilization.—K. A. ALLEN.

GRECHKA, M. K. (1940.) Iskusstvennoe osemenenie guseĭ. **[Artificial insemination of geese.]**—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 300–307. **2287**

A description of the genital organs of ganders and the method and apparatus used for obtaining the semen for artificial insemination are given. Two groups each containing 20 geese were inseminated with 0·03 and 0·05 ml. of semen respectively. A control group containing 15 geese and five ganders was allowed to mate naturally.

The eggs of all groups laid from the third day onwards up to the twelfth day were incubated and it was ascertained that artificial insemination with 0·03 ml. gave an average efficiency of 70% on eggs laid from the 3rd–7th day and of 53% from the 8th–12th day. Artificial insemination with 0·05 ml. of semen gave an average efficiency of 72% from the 3rd–7th day and of 66% from the 8th–12th day. The average efficiency of natural mating was 60%. 200–300 geese can be inseminated with the semen of one gander.—K. A. ALLEN.

KOZLOVA, V. M. (1940.) Zavisimost' protsenta oplodotvoreniya korov ot chisla spermatozoidov, vvedennykh pri iskusstvennom osemenenii v sheĭku matki. **[Dependence of fertilization percentage in cattle upon the number of spermatozoa introduced into the cervix.]**—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 278–284. **2288**

A relationship exists between the number of spermatozoa artificially introduced into the cervix of the cow and the fertilization percentage.

A dose of 200–300 million spermatozoa gave in most cases a maximal fertilization efficiency of 72·2%. Higher doses do not give an increase and

lower doses give a slightly reduced fertilization efficiency.

The effectiveness of the insemination of cows depends not only on the quality and quantity of introduced semen, but also on the stage of oestrus at the time of insemination.—K. A. Allen.

Milovanov, V. K. (1940.) Sovremennoe sostoyanie voprosa o sokhranenii i transporte spermy sel'skokhozyaĭstvennykh zhivotnykh. **[Present knowledge on preservation and transport of animal semen.]**—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 85–107. **2289**

A condition favouring preservation of spermatozoa is limited motility. Factors capable of producing this effect, and also favourable for preservation are (a) pH 6–6·8, (*b*) lack of oxygen, (c) deposition in shallow layers and (d) lowered temperature.

Not all kinds of semen withstand reduction of temperature equally well. Bull and ram semen could be preserved at 10°C. for two weeks to two months but others degenerated at this temperature more than at higher ones. Temperature shock, *i.e.*, too rapid cooling, has an unfavourable influence and more research is needed on low temperatures as well as on means to regulate conditions of the medium of the semen analogous to natural conditions (osmotic pressure, composition of nutrients, pH, composition of metabolic products, antibiotic agents). Sterility is an important factor; Hartstein found that bacterial contamination can be reduced by one-fiftieth to one-hundredth by the use of an artificial vagina.

Since the energy of motility is obtained from the gradual destruction of the lipoid-protein cover of the spermatozoa, which ends in lecithin threads; methods of maintaining the thickness of the lecithin-protein cover must therefore be improved. A glucose, sulphate diluent is a more suitable medium for the spermatozoa than the actual medium produced by the accessory sexual glands: this is especially the case for semen of boars and stallions.

In experiments made with the transport of semen by air it was found that one aeroplane could serve one area round the semen centre in four flying hours; packages were successfully dropped from heights of 30–900 feet. Transport of bull semen by carrier pigeon up to 25 km. has also been successful.—K. A. Allen.

Veiga, J. S. (1946.) Gelatinização do esperma para fins de transporte e de inseminação. **[The use of gelatin in diluents for semen.]**—*Bol. Soc. paul. Med. vet.* **7.** 165–170. **2290**

A description is given of the method of preparation of the semen mixed with gelatin. The semen thus prepared may be used in glass tubes or in paper, wood, or gelatin capsules. This last method is considered the best, as it permits the deposition of the semen right in the entrance of the uterus.—F. A. Esteves.

Berthelon, M. (1946.) Les avortements inapparents avec résorptions embryonnaires ou foetales. **[Inapparent abortion in cattle with resorption of the embryo or foetus.]**—*Rev. Méd. vét., Lyon et Toulouse.* **97.** 145–149. **2291**

B. describes in general terms the factors relating to the break in gestation which takes place in certain female animals, particularly in the mare, associated with absorption of the foetus and return of oestrus.

Three causes are described (1) infection by trichomonads or *Salmonella abortus-equi*, (2) hormones, (3) the effect of malnutrition. Malnutrition is ascribed mainly to poor grass, vitamin E and mineral deficiencies.

The prevention is said to be entirely dependent on attention to diet and supplementing it with minerals and vitamin E.

[This paper is in general terms and no evidence is advanced to support B.'s theories or to confirm the aetiology.]—W. R. Kerr.

Timmermanns, I. J. (1940.) De onvruchtbaarheid bij onze huisdieren en hare bestrijding. **[Infertility in domestic animals and its control.]**—*Tijdschr. Diergeneesk.* **67.** 779–783. **2292**

Hereditary sterility is defined as reduced fertility or reduced resistance to factors causing sterility. It has been observed in all breeds and families of domestic stock as well as in man (*e.g.*, habitual abortion). Infertility in Yorkshire pigs in the Netherlands was traced to certain strains. These were slaughtered and the problem was solved. Inbreeding in the Sjoerd 54 strain of pigs revealed infertility due to a recessive gene. A form of caseation of the testicles and the epidydimis in goat in the second year of service, was eliminated by selecting for breeding only males whose sires have bred well for several seasons.

Experience with cattle has shown that only animals from prolific strains should be selected as sires. External signs in animals may often indicate likely bad breeders. Oedema of the udder before calving may be a sign of high productivity but is not a sign of high fertility. Well developed udder veins facilitate the flow of blood through the udder but abnormal development impairs the circulation to the genital organs, retards or inhibits the functions of these organs and predisposes to infertility. Early oestrus, associated with nervous symptoms and restlessness in heifers, is an indication of low fertility. Mention is made of the anatomy of a cow that produced 14 calves, a pair of twins included, in 13 breeding seasons

and yielded on an average 6,271 kgms. milk and 220·15 kgms. butter fat per year.

The findings of various authors who have used one or other of the various vitamin E preparations are quoted. It is noted that less vitamin E is lost when grass is dried rapidly than in ordinary hay making when the loss may vary from 60–80%.

It is doubted whether F. & M. disease is directly responsible for infertility. *Brucella abortus-suis* would appear to occur in Linburg but has received little attention and has never been definitely diagnosed. T. admits the advantages of artificial insemination in the control of Trichomonas infection.—P. L. LE ROUX.

BAĬDUGANOVA, E. P. (1940.) Metody bor'by s impotentsieĭ molodykh baranov. [**Control of impotence of young rams.**]—*Iskusst. Osemen. sel'khoz. Zhivotn.* **1.** 46–53. **2293**

The study was made from 1936–38 on young Rambouillet rams kept on pasture and given a supplementary ration of 400–600 g. of oats; the majority of them would mount other rams but would not serve ewes.

From the experiments B. concludes that in 128 ascertained cases of impotence the main forms are: impotence caused by pathological changes in the genital organs, impotence caused by endocrinal deficiencies and false impotence caused by perversion of the sexual instinct. That caused by pathological changes is the most serious form and treatment was not attempted, whereas impotence caused by endocrinal deficiencies can be cured by hormone therapy and false impotence can be cured by a period of isolation from other rams.

When selecting a ram for breeding purposes it should be tested, first, with a ewe in oestrus, and then in the presence of another ram (for sexual perversity) and should also be subjected to examination of the testicles and prepuce.

—K. A. A.

KOSIN, I. L. (1946.) **Two examples of terata in the caudal region of domestic poultry.**—*Amer. J. vet. Res.* **7.** 477–480. **2294**

Abnormalities involving both the urogenital and the alimentary systems were encountered in a turkey hen and in a New Hampshire cockerel. In the turkey the abnormalities included two anal openings, three caeca and two left ureters; the bird had grown normally up to 26 weeks of age when it had been killed. The cockerel possessed two anal openings with two short colonic passages leading into a single colon; the single colon was larger than normal and was impacted with faecal material thus apparently causing the death of the bird; the urogenital system in this case was normal.

K. discusses the possible causes of the conditions described.—J. D. BLAXLAND.

*See also absts.* **2168-2171** (trichomniasis); **2270** (respiration of spermatozoa); **2272** (formation of the egg in the fowl).

## ZOOTECHNY

NAIR, K. P. (1947.) **The use of naval and I.W.T. craft for transhipping animals in the Arakan operations, 1944-45.**—*J. R. Army vet. Cps.* **19.** 1–9. **2295**

The organization and the type of ships and fittings used for landing animals, mainly mules, during the Arakan campaign are described and illustrated. In 23,000 animals of the 25th Indian Division embarked and disembarked there were only three casualties.—M. C.

PHILLIPS, R. W., SCHOTT, R. G., & SIMMONS, V. L. (1947.) **Seasonal variations in the occurrence of conceptions in Karakul sheep.**—*J. Anim. Sci.* **6.** 123–132. **2296**

In an experiment covering four years, a flock of Karakul sheep was run with rams throughout the entire year. An anoestrous period occurred during April, May and June. Ewes which nursed lambs, and ewes which lambed in Spring, but whose lambs were removed, did not conceive for 7–8 months after lambing. Ewes which lambed in the autumn or early winter generally conceived again before the anoestrous period (*i.e.*, in 3–4 months).—G. B. S. HEATH.

## TECHNIQUE AND APPARATUS

CAVALLI, L., & MAGNI, G. (1942.) Note di tecnica batteriologica. I. Nefelometria delle sospensioni batteriche. II. Valutazione dell'attività fermentativa dei germi. [**Notes on bacteriological technique. I. Nephelometry of bacterial suspensions. II. Evaluating the fermentation power of bacteria.**]—*G. Batt. Immun.* **29.** 405–411. [English, French & German summaries.] **2297**

Two techniques described comprise one for determining the bacterial count in a suspension by means of the Pulfrich nephelometer, and another for the quantitative determination of fermentation power by colorimetric comparison, and its expression by a single index. The techniques, although very simple, are sufficiently accurate for use in evaluating slight differences in biochemical activity of different strains of the same species.—K. J. SINCLAIR.

GOLDIE, H. (1947.) **Acid-permanganate mixture**

**for cleaning glassware contaminated with tubercle bacilli.**—*Amer. Rev. Tuberc.* **56.** 59–61. [Spanish summary, author's summary copied *verbatim.*] 2298

An oxidizer-sulfuric acid chromic fluid is potentially dangerous for the skin, eyes and respiratory tract of exposed persons. Of the two oxidizing solutions of potassium-permanganate, the acid solution and the alkaline solution, only the acid solution satisfactorily destroyed tubercle bacilli in heavily contaminated glassware.

The fact that no "negative tubes" became positive on re-examination, while the two "positive tubes" became negative suggests that the negative results were not accidental, and that the two positive results were due to cracks on the glass surface.

The acid potassium-permanganate method is perfectly adequate for cleaning new tubes and its combination with a mild mechanical cleaning (rubbing with a cotton applicator) is efficient for the cleaning of scratched tubes. The acid potassium-permanganate fluid does not release any toxic gas compounds, has no smell and is not corrosive for the skin in short contact. It does not affect the glass and its cost is relatively low.

BROWAEYS, M. J. (1943.) Micromanipulateur à pantographe pour le travail microscopique à un grossissement limité. [**A pantograph micromanipulator for microscope work at small magnifications.**]—*Bull. Soc. Path. exot.* **36.** 69–73. 2299

A description of a pantograph adaptor to apparatus for operation within the visual field of a microscope and suitable for use under low-power magnification.—L. M. MARKSON.

RICHARDS, O. W. (1944.) **Phase difference microscopy.**—*Nature, Lond.* **154.** 672. 2300

An annular stop is inserted in the condenser of the microscope and a phase plate into the objective at its back focal plane. The phase plate consists of an annulus having a different transparency from the rest of the plate and of proper size to intercept the light coming directly from the opening in the condenser. The plates can be made so that the detail in the specimen may be seen either brighter or darker than its surroundings, and can be mounted in a disc so that they may be rotated successively into place within the objective.

Phase difference microscopy has been found useful with unstained, transparent tissues, both plant and animal. The resolution of the lenses appears not to be reduced, and considerable time and material are saved as compared with the use of ordinary microscopy by using unstained specimens. The positive phase difference giving dark detail is more useful for measurement and the negative phase showing bright particles is preferable for counting.—E. V. L.

GRATZL, E. (1943.) Endoskopische Photographie bei grossen Haustieren. [**Endoscopic photography in large domestic animals.**]—*Berl. Munch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Dec. 10th. 419–424. 2301

An historical survey of the development of endoscopy is given. G. describes an instrument which is capable of producing coloured cinematograph pictures and discusses the choice of films and time of exposure. Eighteen photographs and four coloured plates are given, showing the pharynx, glottis and nasal cavity in health and disease. L. concludes that for technical reasons endoscopy of horses and oxen is very difficult to carry out because anaesthesia is necessary and it is difficult to maintain the anaesthetized animal in the normal standing position. Details are given of the technique to be adopted.—C. AHARONI.

OKKELS, H., & VRAA-JENSEN, G. (1944.) **On the theory of staining. The adsorption toluene blue method.**—*Acta path. microbiol. scand.* Suppl. No. 54. pp. 117–122. [In English.] 2302

The authors briefly review stains used during the last half century. The action of the gallocyanine stain is initially due to adsorption; then an irreversible chemical process takes place forming the lake on the cellular particles which stain, especially the Nissl-granules. An attempt is made to analyse the nature of toluene blue stain. Details of the technique are given and from the results the authors consider that an adsorption process is the fundamental principle, there is also solution of the colouring matter by the differentiating fluid. Presumably no chemical reaction is causative in bringing about the stain.—E. M. J.

MADEIRA, A. C. (1946.) Modification à la méthode de Gordon et Sweets pour la réticuline. [**A modification of Gordon & Sweets' method for silver impregnation of reticular tissue.**]—*Rev. Med. vet., Lisboa.* **41.** 250–255. [In French.] 2303

M. criticises the method of Gordon & Sweets because tissues other than reticular fibres are usually rendered unrecognisable and the sections frequently become detached from the slides. He suggests that the potassium permanganate and sulphuric acid solutions be replaced by 0·25% aqueous potassium permanganate (ten minutes); the yellow gold chloride to be replaced by a 1 in 300 solution of brown gold chloride to which has been added 30 drops of [glacial ?] acetic acid per 100 ml., this substitution being made to avoid impregnation of the other connective tissue fibres; and the use of a counterstain after

impregnation. Mallory's method or its derivatives should not be used.—L. M. MARKSON.

LILLIE, R. D. (1945.) **Studies on selective staining of collagen with acid anilin dyes.**—*J. tech. Meth.* **25.** 1–47. [Abst. in *Stain Tech.* **21.** 167, copied *verbatim.* Signed: C. RANDALL.] **2304**

Various acid azo, triphenylmethane and diphenylnaphthyl methane dyes were tested as selective collagen stains. Naphthol blue-black (C.I. No. 246), fast green FCF, acid fuchsin (C.I. No. 692), methyl blue (C.I. No. 706), anilin blue (C.I. No. 707), wool green S (C.I. No. 737), and violamine R (C.I. No. 758) gave best results as fiber stains in Van Gieson, mixed Masson-Van Gieson, and Masson-Mallory procedures; nitrazine brilliant croceine, Biebrich scarlet, brilliant purpurin R, fast green FCF, acid fuchsin, wool green S and violamine R excelled as plasma stains in the two latter of the above procedures.

In general picric acid variants surpassed phosphomolybdic and phosphotungstic methods for connective tissue staining. Acidification of picrofuchsin mixtures, with increased content of acid fuchsin, improved both their completeness and selectivity. Picric acid could be used as a mordant between the plasma and collagen stains.

Intermediate mordants could be omitted and differential connective tissue staining still be obtained with methyl blue in acetic acid. HCl was substituted for acetic with superior results.

Selectivity of these stains was best at pH levels below 2·0. Picric acid, phosphotungstic and phosphomolybdic acid methods all appeared to depend on this principle, rather than on any mordant effect.

WHITE, P. B. (1947.) **A method for combined positive and negative staining of bacteria.**—*J. Path. Bact.* **59.** 334–335. **2305**

W. has devised a negative staining method of capsules, which he combines with a positive staining of the bacteria. This is achieved by superimposing positive staining with methylene blue on bacterial films previously prepared by Benian's congo-red method. At the same time the technique is useful, because it permits distinction between bacteria alive at the time of the preparation of the film and those already dead. —E. KLIENEBERGER-NOBEL.

HIGHMAN, B. (1946.) **Improved methods for demonstrating amyloid in paraffin sections.**—*Arch. Path.* **41.** 559–562. **2306**

H. describes the following modifications in the methyl violet method—(a) staining for 5 min. with Weigert's iron haematoxylin to bring out nuclear detail, (b) staining with 0·5% crystal violet in water, or methyl violet in 2·5% aqueous acetic acid and (c) mounting in the modification of Apathy's syrup described by LILLIE & ASHBURN (1943), further modified by adding 50 g. potassium acetate or 10 g. sodium chloride to the formula. H. also discusses a modification of the Congo red method. In both of these methods, the pieces of tissue are fixed in formol saline and paraffin embedded.—LIONEL M. MARKSON.

WHITE, R. W. (1946.) **Poultry post-mortem techniques.**—*Vet. J.* **102.** 317–333. **2307**

W. describes his method of carrying out P.M. examinations of poultry and the techniques adopted, grouped under six headings:– preparation, examination for external parasites and opening of the carcass; examination of the organs *in situ*; examination for internal parasites; bacteriological examination (primary); completion of P.M. examination; specific laboratory techniques. The various conditions likely to be encountered are briefly described. W. lists the various media used and describes methods for routine isolation of pathogenic bacteria. A section on the examination for common irritant poisons is also included.—D. LUKE.

RUKAVINA, J. (1944.) Modifikacija Kotlan-Vajdine igle za aplikaciju lieka protiv plućnih vlasaca i opis intralaringealnog ubrizgavanja. [**Modification of needle for injection of lungworm anthelmintics into the larynx, with a description of the method.**]—*Vet. Arhiv.* **14.** 143–146. [German summary.] **2308**

In the modified Kotlan-Vajdine needle the orifice is at one side and its position is indicated by a mark on the free end of the needle. This modification minimizes stoppage in the needle and ensures that the liquid is discharged in the correct direction.—K. J. SINCLAIR.

LONGLEY, E. O. (1947.) **An apparatus for inhalation anaesthesia.**—*Vet. Rec.* **59.** 4–6. **2309**

An apparatus is described and also the technique for the inhalation anaesthesia of small animals which serves for anaesthesia by ether alone, chloroform alone, or ether and chloroform vapours together; induction by chloroform and maintenance by ether separately; light maintenance by ether with the provision of a separate oxygen supply; the free supply of oxygen alone, or with the addition of carbon-dioxide.

L. claims that the apparatus, which can be constructed from simple components costing less than £1, can be assembled in less than a minute and is very easy to manipulate. It comprises three 4 oz. wide-mouthed bottles containing water, ether and chloroform, conveniently set in triangular formation in a wooden base (5½ in. diameter), and connected together by means of tubing and

two three-way stopcocks. Carbon-dioxide is supplied from a small sparklet gun and oxygen from a gas cylinder. Manipulation of the two stopcocks can provide any of the mixtures enumerated above; the process is described and illustrated.—F. R. BELL.

DETERLING, R. A., Jr., & ESSEX, H. E. (1945.) **A tail plethysmograph for measuring arterial blood pressure in dogs.**—*Proc. Soc. exp. Biol., N.Y.* **58.** 247–249. **2310**

A modification of the tail plethysmograph as used on the rat is described for use on the dog. The apparatus can be adjusted to deal with the variations in length and shape of dogs' tails, and provides a simple and repeatable measure of the arterial blood pressure. In anaesthetized, trained and untrained dogs, data on blood pressure obtained by this method agree very closely with those obtained by direct arterial puncture, and by the mercury manometer. The tail plethysmograph method possesses great advantages over previous methods of determining the blood pressure in the dog, these having all entailed cannulating, puncturing or exteriorizing an artery. [See, however, ALLEN, F. M. (1941). *V. B.* **13.** 114 and RULE, C. (1944). *V. B.* **15.** 33, who describe the technique for using a sphygmomanometer on dogs.]—MARY C. LOBBAN.

VATOVEC, S. (1942.) Intravenozna pielografija kod psa. **[Intravenous pyelography in the dog.]** —*Vet. Arhiv.* **12.** 102–125. [Abst. from German summary.] **2311**

Intravenous pyelography in the dog is successful only exceptionally in spite of heavy dosages of contrast material. The use of contrast materials offers promise, provided that urine can be prevented from passing from ureters to bladder. It was found experimentally that this can be done by increasing the pressure in the bladder (even above 30 mm. Hg); A pressure within the bladder of about 50 mm. Hg is usually sufficient and this can be produced either by introducing physiological saline solution or air into the bladder. Using this measure and an intravenous injection of contrast material (uroselectan or per-abrodil), the pelvis of the kidney, calyces and the ureter can be examined. The minimum dose of contrast material applied intravenously was 0·04 g. and the optimum dose 0·2 g. of the substance per kg. At least ten minutes should elapse after the bladder has reached the increased pressure before the X-ray exposures are made. Narcosis is necessary only for excited or nervous dogs.

—K. J. SINCLAIR.

ELLIS, G. H., MATRONE, G., & MAYNARD, L. A. (1946.) **A 72 percent $H_2SO_4$ method for the determination of lignin and its use in animal nutrition studies.**—*J. Anim. Sci.* **5.** 285–297. **2312**

The standard method of analysis of a feeding stuff and its limitations are discussed. The existing value of the total digestible nutrients is shown to be capable of more accurate estimation by determining the lignin, cellulose, and other carbohydrate fractions in place of the usual crude fibre and nitrogen-free extract. The ratio of the lignin in the food and in the resulting faeces is a measure of the digestibility of the other fractions.

The technique of estimating the lignin fraction is described and tables are provided showing how the yield of lignin varies with the pre-treatment of the food, and also that ruminants do not digest lignin.—G. L. BAILEY.

DRAIZE, J. H., WOODARD, G., & CALVERY, H. O. (1944.) **Methods for the study of irritation and toxicity of substances applied topically to the skin and mucous membranes.**—*J. Pharmacol.* **82.** 377–390. **2313**

Detailed descriptions are given of apparatus, techniques and procedures employed in the evaluation of relative toxicities of liquids, solids or solutions applied to the skin of experimental animals. Methods are described for scoring and assessing the effects of topical applications. In this way valuable qualitative and quantitative information can be obtained by the use of relatively simple procedures.—A. EDEN.

HOLDEN, H. F. (1947.) **On the colorimetric determination of haemoglobin.**—*Aust. J. exp. Biol. med. Sci.* **25.** 57–60. **2314**

H. emphasizes the need for standard calibration of the glass parts of haemoglobinometers and suggests that analysts who wish to verify the quality of their work should be able to obtain standard blood pigment derivatives.

The cold alkaline haematin method of haemoglobin determination is advocated. It is sufficiently inexpensive and self-consistent for its advantages in speed and simplicity over the acid haematin method to be of interest to those who have no elaborate apparatus.

Matching inorganic salt solutions for the acid haematin and cold alkaline haematin methods is described.—N. WICKHAM.

SVEDBERG, T. (1947.) **Molecular sedimentation in the ultracentrifuge.**—*Endeavour.* **6.** 89–95. **2315**

The ultracentrifuge is useful in examining the homogeneity of proteins and for the determination of their molecular weights. In the veterinary field it has revealed that a serum protein, "fetuin", of molecular weight 50,000 is present in many foetal sera and in the sera of newly born animals and that, during the process of antibody production

following immunization, an increase in $\gamma$-globulin is often observed.

The changes in the sera of animals, due to increasing age, have also been followed. In the foetal sera of cattle hardly any $\gamma$-globulin is perceptible, only an asymmetric peak of albumin and fetuin plus a small amount of a heavy component being observed. $\gamma$-Globulin appears some time after the calf has received colostrum. A decrease of $\gamma$-globulin and fetuin then occurs followed by disappearance of the fetuin and increase in $\gamma$-globulin, which corresponds to a building up of natural immunity and continues until the "natural" level is reached.—M. WOODBINE.

## REPORTS

AUSTRALIA, QUEENSLAND. (1946.) **Annual report of the Department of Agriculture and Stock for the year 1945-46.** [SHORT, R. P. N.] pp. 87. Items of Veterinary interest pp. 31–49. Brisbane: A. H. Tucker. **2316**

Buffalo fly (*Siphona exigua*) continued to spread during the year. Cattle coming south are sprayed at Bororen and Isis Junction, using a D.D.T. preparation instead of the previously used tar-oil mixture. Field trials have shown that D.D.T. has considerable promise for the control of the buffalo fly. The fly trap, modified from the U.S.A. Horn Fly trap by the research team of the Council for Scientific and Industrial Research [*V. B.* **17.** 294], is being given extensive trials.

BRUCELLOSIS is widespread and causes considerable economic loss among cattle. The test and slaughter method of control has proved too costly for general application. Tests of Strain 19 vaccine are planned. TUBERCULOSIS testing of herds supplying milk to Brisbane was continued. All cattle exhibited at the Brisbane Show are tested. Cases of high incidence of tuberculosis in pigs have been dealt with by testing and destruction of cows supplying milk for pig feeding. TB. is widespread among pigs and caused condemnation of 0·718% (2,701) of pigs slaughtered. Extensive lesions were found in young pigs four months old. Testing of the breeding stock on some farms showed some very high percentages of reactors.

Several outbreaks of GLASSER'S DISEASE occurred. The symptoms included fever, lameness in one or more limbs and marked depression. At P.M. examination an acute arthritis with extensive fibrinous deposits in the pleural and peritoneal cavities were found. ST. GEORGE DISEASE, previously thought to be confined to regions of red, sandy soil carrying coarse grasses and occurring only after prolonged dry periods, has been seen on very good country in Central Queensland (black soil carrying mitchell grass) and in a coastal region near Rockhampton. The disease is not contagious and does not appear to be due to a poison plant. MYCOTIC DERMATITIS, ARSENICAL POISONING, PLEUROPNEUMONIA CONTAGIOSA, BLACKLEG and *Salmonella* infection in calves are mentioned briefly. PNEUMONIA in calves was successfully treated with sulphathiazole.

Unusually dry conditions in early winter were associated with widespread outbreaks of HELMINTHIASES. *Haemonchus contortus* was most commonly involved, with counts up to 20,000 worms in individual animals. *Bunostomum plebotomum* and *Cooperia* spp. were also common. In one outbreak *Trichostrongylus axei* was present in large numbers, and in another *Paramphistomum* sp. Studies on differentiation of the species of infective larvae reached a stage where differential counts can be used in diagnosis.

In pigs the pathogenicity and control of *Ascaris suum* has been investigated. Light infestations were established in four out of five pigs by using continuous daily doses of about 50 eggs. Sodium fluoride proved highly efficient against *A. suum*. It was ineffective against *Trichuris trichiura*, but higher dose rates showed some promise against *Oesophagostomum* spp. High efficiency was recorded against "stomach worms". A dose rate of 0·1 g. per 1 lb. body weight, fed for one day in an amount of dry feed equivalent to 1 lb. for every 25 lb. live weight combined efficiency and safety.

A 2% suspension of D.D.T. killed all lice and provided protection against re-infestation.

Among poultry *Capillaria annulata* was reported for the first time. *Acuaria spiralis* was recorded again. Larvae of the fowl tick (*Argas persicus*) were readily killed by spraying infested premises with 2% D.D.T. in kerosene. No larvae appeared for three months. Although the number of nymphs and adults was reduced considerably, a few could always be found. Laboratory trials showed that while larvae were very susceptible to D.D.T.-treated surfaces, nymphs and adults were resistant. All stages appeared to be highly susceptible to gammexane when exposed to treated surfaces.

TICK FEVER deaths in the Beaudesert district among cattle were caused by *Ansplasma marginale*. *Boöphilus microplus*, the arsenic-resistant tick, is still causing concern, particularly in attempting to cleanse cattle before moving to tick-free regions. Some ticks, on protected areas of the body, completed their development although

the cattle were dipped in an arsenical wash weekly. A heavy winter coat provided protection for the ticks. D.D.T. is showing considerable promise but there are a number of problems related to methods of application, forms in which D.D.T. is applied (emulsions, suspensions) and analytical methods for determining the D.D.T. content of dipping vats.

The ticks *Amblyomma triguttatum* and *Rhipicephalus sanguineus* were recorded from cattle.

Several cases of PSOROPTIC OTACARIASIS with *Psoroptes hippotis* present were reported. Various strengths of D.D.T. killed all *Echidnophaga gallinacea* and *Ctenocephalides* sp. on dogs which then remained free from fleas for 3–5 weeks. D.D.T. (2% suspension) was fatal for cats.

Gammexane (1% emulsion) killed all *Rhipicephalus sanguineus* on dogs and gave 10 days' protection. Powder (10%) in kaolin was also effective. Dipping of birds in a 2% suspension of D.D.T. killed all *Echidnophaga gallinacea* and protected against reinfestation for a period of 16 weeks. Other poultry diseases mentioned are PULLORUM DISEASE, COCCIDIOSIS, DEFICIENCIES OF VITAMINS A AND B, LEUCOSIS and SPIROCHAETOSIS.

For the control of sheep blowfly considerable extension work has been carried out by field officers trained in the technique of carrying out the Mules Operation and correct docking of the tail. Epidemiological information derived from field trials is being applied in control of helminthiases of sheep. Phenothiazine, used as a routine treatment in April and August, is proving valuable. Following the finding in Queensland of specimens of "steely" wool of the type seen in the known copper-deficient areas of South Australia, a survey was carried out in conjunction with the Division of Biochemistry and General Nutrition of the Council for Scientific and Industrial Research. It was found that copper deficiency occurred in large areas of country in the north-west and south-west of Queensland. In some areas where water supplies contain large amounts of fluorides destruction of the permanent teeth takes place at an early age, resulting in difficulties in maintaining sheep numbers because of low rate of replacement and heavy rate of culling because of "broken mouth". Observations show that if sheep can be kept away from fluorided waters until such time as they are "four tooths" (*i.e.*, the first four permanent incisors are in wear, and the enamel deposition on the molars is complete) little damage is likely to be done to the molars.

Post-marking mortalities in lambs (due to *Clostridium septicum*), PREGNANCY TOXAEMIA, and INFECTIOUS LABIAL DERMATITIS, are also mentioned.

The following poisonous plants are noted as affecting cattle :– *Trema aspera*, *Cestrum parquii*, *Lantana* spp., *Erythropholeum laboucherii*, *Gastrolobium grandiflorum*, *Myoporum acuminatum*. Sheep affected by ingestion of Weir Vine (*Ipomoea calobra*, showed emaciation, inco-ordination of gait and a high carriage of the head, with the muzzle pointing vertically. Ingestion of wild parsnip (*Didiscus glaucifolius*) caused lameness and swelling of the joints of lambs. Soda Bush (*Threlkeldia proceriflora*) caused heavy mortalities. "Humpy Back" may be produced by ingestion of *Malvastrum spicatum*. A severe outbreak of ATAXIA occurred among horses in the Bundaberg district, and to a lesser degree in the Bowen and Rockhampton districts. A poisonous algae was thought to be the cause, but further observations disproved the suggestion.—H. McL. GORDON.

AUSTRALIA, QUEENSLAND. (1947.) **Annual report of the Department of Agriculture and Stock for the year 1946-47.** [BELL, A. F.] Items of veterinary interest, pp. 39–40, 42–53. Brisbane: A. H. Tucker. **2317**

Abnormally dry conditions caused disappearance of the BUFFALO FLY (*Siphona exigua*) from extensive regions. The farthest southern extension of the fly was to Maryborough on the coast and Dalby inland, but it has apparently disappeared from the region south of an east-west line through Gladstone. Proper use of D.D.T. provides complete control of the fly. The use of D.D.T. and gammexane has been effective in the control of *Boöphilus microplus* with intervals between dippings greatly exceeding those required when arsenical insecticides are used.

Strain 19 vaccination is being introduced, for BRUCELLOSIS. In cases of bovine PLEUROPNEUMONIA the complement fixation test has been applied for the detection of infected cattle. The number of reacting animals, not showing clinical symptoms, may be considerable. Subsequent tests showed that many of the non-clinical cases recover. Tuberculin testing of cows supplying milk to Brisbane has been continued. Repeated tests show progressive reduction in incidence.

A dry period from winter to early summer was associated with outbreaks of helminth infestation in young cattle. *Haemonchus contortus*, *Bunostomum phlebotomum* and *Cooperia* spp. were found in large numbers. *Paramphistomum* spp. were commonly found in large numbers, but the pathogenic effect of infestations with adult worms in the rumen and reticulum is uncertain. Work on the epidemiology of gastro-intestinal nematode infestations was continued. An outbreak of FASCIOLIASIS (*F. hepatica*) was recorded in the Gympie district. *Lymnaea brazieri*, the common intermediate host in Australia, was found in the region concerned.

*Amblyomma triguttatum*, usually found on the kangaroo and other marsupials continues to be a common tick of cattle. Work on its life-history was begun. Heavy infestations of *Ixodes holocyclus* were responsible for paralysis mortalities among adult cattle.

WALLUM DISEASE of cattle is thought to be due to ingestion of zamia palm (*Macrozamia* spp.). ERGOT poisoning was common in coastal regions following prolific growth of infected paspalum grass after heavy rain. EPHEMERAL FEVER, FOOT ROT, OPHTHALMIA, COWPOX, MYCOTIC DERMATITIS (becoming more prevalent), CALF DIPHTHERIA (due to *Fusiformis necrophorus*) and salmonella infections are mentioned.

The following diseases of horses were recorded :– TALLEBUDGERA HORSE DISEASE occurs in south coastal regions. Symptoms and P.M. findings resemble those of " Jaagziekte " recorded in South Africa. Mist weed (*Eupatorium adenophorum*) is a suspected cause, but a single feeding test did not produce symptoms. ATAXIA (COASTAL STAGGERS) was prevalent in the Bundaberg district from late summer to mid-winter. Top-dressing affected pastures with a mineral mixture of trace elements, excluding cobalt, did not prevent the disease. Intracerebral injections of mice, rabbits and a horse with material from the brain and spinal cord of an advanced case gave nó result. Subcutaneous injections of saline extracts of insects (including *Stomoxys*, *Musca*, *Aedes*, *Culex* and *Anopheles*) failed to produce the disease. WALKABOUT DISEASE was recorded over a large region in northern Queensland. The supposed cause, Whitewood (*Atalaya hemiglauca*), was very scanty on some of the affected properties.

On dogs and cats gammexane washes (0·03–0·13% $\gamma$-isomer) killed *Rhipicephalus sanguineus* more rapidly, but did not provide as great a period of protection against reinfestation as 0·5–2·0% D.D.T. washes (10–17 days). ULCERATIVE STOMATITIS and PHARYNGITIS in cats was prevalent in Brisbane. A streptococcus of Group C type was recovered from the lesions. Severe ANCYLOSTOMIASIS was recorded in dogs. During a campaign to control STICKFAST FLEA (*Echidnophaga gallinacea*) in poultry, cats were found to be very susceptible to washing in 2·0% D.D.T. suspension. A case of poisoning occurred in a dog.

Epidemiological studies on GASTRO-INTESTINAL HELMINTHIASES in sheep have been continued in conjunction with the McMaster Laboratory (Council for Scientific and Industrial Research) and have formed the basis for numerous field days and demonstrations. Considerable time has been devoted to extension work on control of BLOWFLY STRIKE in sheep, with special reference to the Mules Operation, cutting the tail at the optimum length, and an operation on the tail to reduce urine staining. A climatological survey of Queensland has revealed regions in which, owing to high temperatures, rams may be infertile for periods up to six months. The toxicity of the plants Weir Vine (*Ipomoea calobra*) and Wild Mulberry (*Malvastrum spicatum*) are under study and initial feeding trials indicate that the former can produce a severe nephritis, while the latter (which contains large amounts of nitrates) may produce a condition known as " humpy back ". Other conditions mentioned include INFECTIOUS LABIAL DERMATITIS (vaccination trials), post-shearing mortalities (due to *Clostridium septicum* and possibly *Cl. oedematiens*), COPPER DEFICIENCY, PHOTOSENSITIZATION following ingestion of Yellow Wood (*Terminalia oblongata*) and Native Couch (*Brachyachne convergens*), MORTALITIES AFTER DIPPING in arsenical baths during weather conditions when the usual daily rise in evaporation rate to reach a maximum between noon and 3 p.m. did not occur, and FLUOROSIS.

*Haemophilus* sp. was isolated from cases of INFLUENZAL ARTHRITIS (GLASSER'S DISEASE), of pigs. NITRITE POISONING occurred where well-water with a high nitrate content was used as a water supply and for production of swill by boiling meat scraps. Chemical analysis and toxicity tests showed that boiling was not responsible for any marked reduction of nitrates to nitrites, but that on standing in tin-lined vessels the nitrite content increased quickly to lethal levels, due probably to tin acting as a catalyst. Tests showed that sodium nitrite given in water at a level of 0·8 g. per kg. body weight was very toxic, while at 0·9 g. per kg. it was fatal. SODIUM FLUORIDE AS AN ANTHELMINTIC was given further attention. Young pigs given three treatments at monthly intervals showed that an appreciable amount of fluorine had been deposited in the long bones, but there were no clinical indications that treatment had been otherwise harmful. The presence of mature *Ascaris lumbricoides* in pigs 5–6 weeks old indicates the possibility of pre-natal infestation having occurred.

*Balantidium coli* were found in a case showing ulceration and thickening of the large intestine.

Among the diseases of poultry AVIAN LEUCOSIS is very prevalent and causes considerable economic loss. PULLORUM DISEASE is common. There have been some cases of unexplained outbreaks in previously clean flocks. CAECAL COCCIDIOSIS (*Eimeria tenella*) and INTESTINAL COCCIDIOSIS (*E. necatrix*) were recorded, as well as an outbreak probably due to *E. cervulina*. Sulphamethazine given at 9 g. of the sodium salt per gal. of drinking water was toxic. Sulphamerazine was a superior drug.

The area affected with the stickfast flea (*Echidnophaga gallinacea* has been reduced. Dipping in 0·5–2·0% D.D.T. kills all fleas and affords protection for 2–3 weeks (0·5%), 7–11 weeks (1·0%) and 19 weeks (2·0%). Mortalities in chickens and ducks after dipping in 2% suspensions of D.D.T. were probably associated with a calcium deficient diet.

Heavy mortalities were recorded after ingestion of the winged swarming stages of the ant, *Monomorium rothsteini*.—H. McL. Gordon.

Tanganyika Territory. (1948.) **Annual report of the Department of Veterinary Science and Animal Husbandry for the year 1946.** [Reid, N. R.] pp. 18. Dar es Salaam: Govt. Printer. 2s. **2318**

In spite of the fact that the Department was greatly understaffed, 1946 was a year of steady progress and consolidation. Climatically the year was disastrous, thousands of stock died of starvation and it was only the rains in November which staved off a great disaster.

Rinderpest was one of the main preoccupations of the Department, and some half million injections of Kenya Attenuated Goat Virus (K.A.G.) were given. In many cases these were given simultaneously with pleuro-pneumonia vaccine. In spite of game repeatedly carrying the disease, so threatening the susceptible cattle to the south of Tanganyika, the disease was kept to the north of the Central Railway Line. An outbreak in Tanga Province appeared to have broken down the immunity engendered by K.A.G. and also caused the infection of oryx, impalla, waterbuck and Grant's gazelle, which species are usually regarded as being fairly resistant to Rinderpest.

Bovine Contagious Pleuro-pneumonia has for long been a danger in the Musoma District of Tanganyika, but thanks to repeated inoculation campaigns, with vaccine strains obtained from Kenya, at the end of the year no active cases of the disease could be found: this work entailed some 345,000 inoculations in 1946. It is notable that many of these inoculations were given simultaneously with inoculations of K.A.G., and also that a castration campaign, which included animals being inoculated, was carried out at the same time. Castration was by the removal of the testes, the Burdizzo method not being considered sufficiently reliable.

East Coast Fever control suffered from a lack of cement with which to build dipping tanks, but the hand-dressing service continued to prove its value, some 300,000 treatments being given, and of these about three-quarters were to trade stock in transit.

Anthrax and Blackquarter are also major diseases but shortage of staff precluded full-scale inoculation campaigns.

A focus of Tuberculosis in a very large section of the Southern Highlands Province is causing concern. Alum toxoid proved its therapeutic value in one case of Ulcerative Lymphangitis.

In the sphere of animal breeding the Central Breeding Station dairy and pig units were completed and work continued with the object of "evolving a useful dual-purpose type of zebu, which while giving 300 gallons of good quality milk in about 300 days will stand up to the local environment with the minimum of supplementary feeding". Grading-up with Indian stock is hastening the achievement of this object. The grade-Ayrshires are now being down-graded with Indian bulls with a consequent increase in yield and stamina. Details are given of the various demonstration and experimental farms, and mention is made of the building of a new Government Dairy at Tanga for the supply of the township.

The war having ended it was necessary to resort to voluntary, as opposed to compulsory, primary cattle markets. The first reaction was a heavy fall in the supplies which were brought forward, 212,359 cattle were sold at an average price of Shs. 51/40 per head, which is 63,020 less than in 1945, prices showed little variation from those of the previous year. The cattle marketing system of sale by grade-and-weight was instituted in one province and "it seemed well liked by both buyer and seller; it had the effect of stabilizing prices". It is, however, remarked that the Masai prefer "the element of excitement which is provided by the gamble of an auction".

The increase in staff to deal with hides and skins improvement brought about a corresponding improvement in quality, the chief innovation being the widespread sale and use of "biffing" hammers with which to remove the hides, thus obviating the dangerous use of the knife.

The drought reduced the amount of butter-fat which was produced, but in spite of this production plans were instituted and a £20,00 scheme for the improvement of dairy produce i the Lake Province was launched.

A part of the report is devoted to the work of the Laboratory. Shortage of staff was again th limiting factor, and it was not found possible t do more than routine work.

A field experiment has shown that und conditions of light tsetse infestation S.897 (phena thridinium chloride) is of great value if treatment is promptly undertaken.

Experiments were made in the use of the Stormont Tuberculin Test, and so successful were these that this is now the routine procedure.

A considerable amount of experimental work on RINDERPEST was done in connexion with the antigenic value of various tissues and to the immunity engendered by inactivated tissue vaccines. The main conclusions which were reached are as follows :– " Local goats show a considerable variation in susceptibility and reaction to RINDERPEST virus. Lung material of oxen at the height of the fever contains a large amount of virus, but when the material is used for vaccine production it is entirely unsatisfactory. The vaccine rendered young adult oxen completely immune to a challenge dose of virulent blood a fortnight after vaccination. Oxen partially protected from the disease by doses of vaccine insufficient to render them immune, remain susceptible to the virus but have an enhanced resistance. Such oxen when reacting to a dose of virulent blood are not highly infectious to in-contact animals ".—E. F. P.

SWEDEN. (1946.) Det civila veterinärväsendet år 1944. **[Sweden. Report of the Civil Veterinary Service for 1944.]** [ALEGREN, A.] pp. 69. Stockholm : Kungl. Boktryckeriet. **2319**

The report describes the organization and activities of veterinary services in Sweden. The number of veterinarians in 1944 was 629 including those registered under special regulations. A report is given of the state of animal health in each of the 22 " laner " or provinces. A short report with statistics is given for each of the major animal diseases encountered, together with a report on the various food inspection and sanitary authorities.—A. G. WARREN.

## BOOK REVIEWS

DELARUE, J. [Professor of the Faculty of Medicine in Paris]. (1947.) Le problème biologique du cancer. **[The biological problem of cancer.]** pp. 200. 31 figs. 1 table. Paris : Masson et Cie. 400 fr. **2320**

This book, which is written for the medical student and the new medical graduate, covers a wide field, from hypotheses on the causation of cancer to discussions on the available methods of treatment. The reader's interest is stimulated by discussions on the lines of research at present being pursued, and estimates of their relative worth.

This monograph can be recommended to the veterinary surgeon as a clear and readable exposition of an important subject.—I. W. J.

COWARD, K. H. [D.Sc. ; Reader in Biochemistry, University of London, Head of the Nutrition Dept. Pharmaceutical Society of Great Britain]. (1947.) **The biological standardisation of the vitamins.** pp. vii + 224, 38 figs. and 21 tables. London : Baillière, Tindall & Cox. 2nd Edit. 16s. **2321**

In this second edition, important additions and alterations increase the value of a book already providing much useful information and advice for all who are engaged in determining the vitamin potency of foodstuffs. The introductory chapter on the general principles which govern the biological methods of determination of the vitamins includes details of standards of reference, basal diets, planning of experiments and examination of results, with some salutary warnings on the limitations of biological methods. Considerable attention is given to the problems of obtaining satisfactory animals for these tests and of housing and caring for them during experiments. Separate chapters contain full details of methods of estimating vitamins A, $B_1$, C, D and E, all of which include much new material provided by the experiences of the past ten years during which advances have been made especially in the methods of calculating and presenting results. More knowledge has been obtained also on the subject of the interdependence of the various vitamins and a chapter is concerned with the effects of partial deficiency, or excess, of one vitamin on the growth response attributable to another factor.

The last four chapters form a separate section devoted to an entirely revised consideration of the statistical treatment of results. These chapters include the most recent developments in the methods of estimating fiducial limits of error and give a fairly simple account of the calculations with reference to more extensive treatises that will be required by the more mathematically minded readers.

The biological standardization of vitamins by reliable methods is still an urgent scientific problem and this helpful book does much to encourage the right approach to the subject. It may be read with advantage by all who have any concern with biological study of the vitamins and with the general care of laboratory animals.—A. M. C.

ADAMS, H. S. [Chief, Bureau of Environmental Hygiene, Division of Public Health, Minneapolis, and Lecturer, School of Public Health, University of Minnesota]. (1947.) **Milk and food sanitation practice.** pp. xi + 311. 65 figs. New York : The Commonwealth Fund ; London : Geoffrey Cumberlege. 18s. **2322**

There are 13 chapters, dealing with " history and the importance of milk control " ; " planning and administering a milk control programme " ; " essentials of sanitary milk production " ; " undesirable flavour of milk " ; " the pasteurization process " ; " plans for the modern pasteurization

plant"; "pasteurization plant equipment and inspection"; "pasteurization plant practice"; "laboratory procedure used to evaluate a milk supply"; "the sanitary control of frozen desserts"; "the food control problem"; "essentials of food establishment sanitation" and "the instruction and training of food handlers". In addition there are 11 appendices.

The book deals essentially with the practical side of the questions involved. It gives elaborate details all the way through the text, with emphasis on the way in which the plant for each of the branches concerned should be selected and laid out. The organization of the staff and the training all grades should receive are discussed. Great detail is given on the manner in which they should carry out their duties.

The book should be useful as a guide to the practice of milk and food sanitation in the U.S.A.

—J. O. L. King.

Kracke, R. R. [M.D., Dean & Professor of clinical medicine, Medical College of Alabama, Birmingham, Alabama]. (1947.) **Color atlas of hematology with brief clinical descriptions of various diseases.** pp. xi + 204. 35 plates. Philadelphia, London & Montreal: J. B. Lippincott Company. 30s. **2323**

This book is intended for the use of general medical practitioners, medical students and laboratory technicians.

It contains many admirable coloured plates illustrating some of the more common pathological changes in the blood and the various types of cell found in normal bone marrow and peripheral blood. The representations of the myelocyte series are especially commendable for their wealth of detail and clarity of reproduction. In many cases a whole plate is devoted to the demonstration of the variations encountered in one particular cell type.

The text contains brief descriptions of the various cell types, the pathological and other allied conditions being illustrated. There is a chapter on technique and a glossary. The final chapter is devoted to short notes on the haematological findings in various diseases of man. This chapter is the only one which contains any references.

It is unfortunate that the author's choice of nomenclature, particularly of the erythrocytic series, is not one which is likely to meet with general approval among haematologists. The use of the terms "megaloblast" and "macroblast" as names of types of normal cells in the erythrocytic series is unfortunate. It is generally accepted that such terms, particularly the former, should be reserved for the type of cell encountered in the macrocytic anaemias, particularly pernicious anaemia.

The techniques described are those used by the author at his laboratory. The descriptions of the individual methods might well have been amplified in some cases. When it is remembered for whom the book has been written, it is to be regretted that no mention has been made of the pitfalls which await the uninitiated student or technician when he first handles the more common working tools of a haematologist. In addition, when dealing with some of the more advanced tests it is possible that the method selected by the author may not, in every case, be that held to be the most satisfactory by other haematologists.

—J. A. J. Venn.

Wagener, K. [Professor. Director of the Hygiene Institute of the Veterinary College, Hanover]. (1948.) Kursus der veterinärmedizinischen Mikrobiologie. **[Course of veterinary microbiology.]** pp. vii + 136. 16 figs. Berlin: Verlagsbuchhandlung von Richard Schoetz. **2324**

This is not a text-book but is intended to be used during the student's practical work under the directions of the teacher. It therefore gives detailed and often meticulous instructions for the use of the microscope, the preparation of microscopical specimens and their examination, for the cultural investigation of bacteria, the examination P.M. of experimental animals and the setting up of serological reactions. These instructions are accompanied by many illustrations. In the second part of the booklet the main pathogenic micro-organisms are listed and the main methods of their diagnosis are indicated together with protocols intended to be completed by the student. In an appendix coloured drawings show the development and the various forms of erythrocytes, leucocytes and lymphocytes and formulae are given for the preparation of stains and media. Short biographical remarks concerning a number of authors mentioned in the text are included at the end of the book. The reader looks in vain for Paul Ehrlich's name in the text or in the bibliography, though a whole page of illustrations has been devoted to the complement fixation test.

The omission of the whole group of pleuro-pneumonia-like organisms, particularly its main, widely spread representative, the organism of bovine contagious pleuro-pneumonia, is surprising in a veterinary book.—E. Klieneberger-Nobel.

5623—Wt.P3—Dd285—1/49—H.R.G., Ltd.—G.13.

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